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ARES SHIPYARD'S SWELLING WAVE OF SUCCESS
WITH DIVERSIFIED EXPORT PROGRAMS

TURKISH NAVAL FORCES – DEPENDABLE IN COOPERATION,
DETERRENT IN CRISES AND DECISIVE IN COMBAT

TAI DELIVERS THE FIRST ANKA-S UAV
SYSTEMS TO TURAF

PAKISTAN'S SUBMARINES ENTRUSTED TO STM

TURKEY CONTRACTS EUROSAM, ASELSAN AND ROKETSAN TO DEFINE
ITS FUTURE UNIQUE AIR AND MISSILE DEFENSE SYSTEMS

for global security



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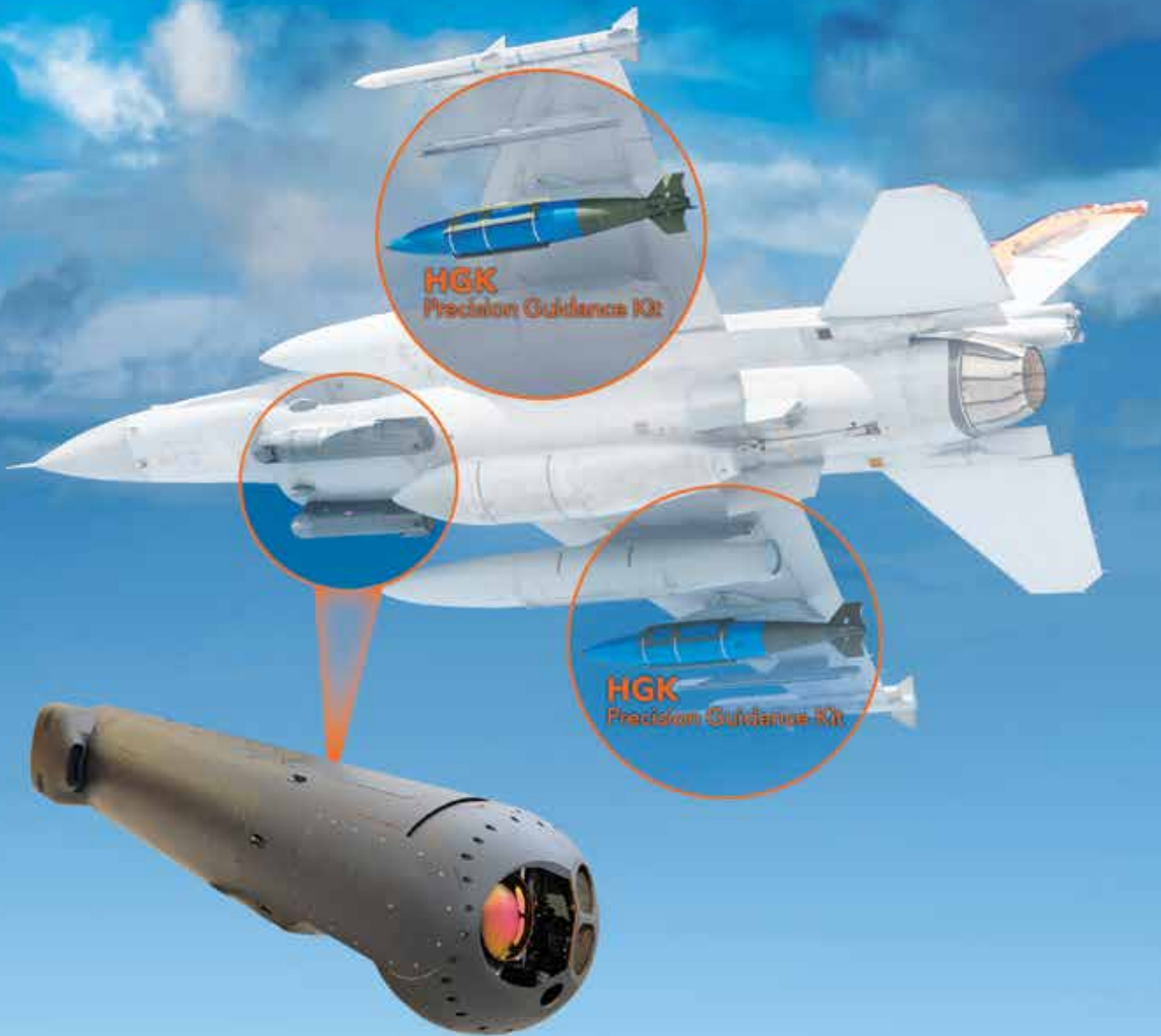


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Publisher

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Publisher & Editor in Chief

Ayşe EVERS

a.akalin@defence-turkey.com

Managing Editor

Cem AKALIN

cem.akalin@defence-turkey.com

Administrative Coordinator

Yeşim BİLGİNOĞLU YÖRÜK

y.bilginoglu@defence-turkey.com

International Relations Director

Şebnem AKALIN

sebnem.akalin@defence-turkey.com

SME's Advertisement Director

Yasemin BOLAT YILDIZ

yasemin.yildiz@defence-turkey.com

Translation

Tanyel AKMAN

info@defence-turkey.com

Editing

Mona Melleberg YÜKSELTÜRK

Robert EVERS

Graphics & Design

Gülsemin BOLAT

Görkem ELMAS

info@defence-turkey.com

Photographer

Sinan Niyazi KUTSAL

Advisory Board

(R) Major General Fahir ALTAN

(R) Navy Captain Zafer BETONER

Prof Dr. Nafiz ALEMDAROĞLU

Cem KOÇ

Asst. Prof. Dr. Altan ÖZKİL

Kaya YAZGAN

Ali KALIPÇI

Zeynep KAREL

DEFENCE TURKEY

Administrative Office

DT Medya LTD.STİ

Güneypark Kümeevleri (Sinpaş Altınoran)

Kule 3 No:142

Çankaya Ankara / Turkey

Tel: +90 (312) 447 1320

info@defenceturkey.com

www.defenceturkey.com

Printing

Demir Ofis Kirtasiye

Perpa Ticaret Merkezi B Blok

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Tel: +90 212 222 26 36

demirotiskirtasiye@hotmail.com

www.demirotiskirtasiye.com

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6



14



28



58



62



6 ARES Shipyard's Swelling Wave of Success with Diversified Export Programs

14 Turkish Naval Forces – Dependable in Cooperation, Deterrent in Crises and Decisive in Combat

28 Multiple Competencies in Defense and Technology - Turkey's Seasoned Experts, ONUR A.Ş

36 Turkish Defense Industry Assembly's 35th Meeting held in Ankara

42 ASELBÜYÜ: Turkey's National Sonobuoy

46 Prof. Hasan Mandal Assigned as TÜBİTAK's President

48 Eurasia Air Show 2018 – Expected to Rival the Dubai Air Show in the Near Future

52 TCG A-584 "Akın" Delivered to the Turkish Naval Forces Command

53 TAI Delivers the First Anka-S UAV Systems to TuRAF

56 Aselsan Launched the Serial Production of Missile Hunters

58 Pakistan's Submarines Entrusted to STM

60 Turkey Contracts Eurosam, Aselsan and Roketsan to Define its Future Unique Air and Missile Defense Systems

61 FNSS Armored Vehicles Successfully Execute "Passage from Deadwater" Drill

62 New Type Submarine Project's 3rd Vessel 'Murat Reis' First Welding Ceremony Takes Place in Gölcük

64 STM Publishes Cyber Threat Report

65 Aselsan Strengthens its Presence in Malaysia

65 Hürkuş- B Accomplishes Maiden Flight

66 SSM R&D Projects Signing Ceremony

68 TSKK 5th Project Market Takes Place in Ankara

71 TAI and Turkish Technic Signed Cooperation Protocol to Develop Aerospace Market

71 Bolstering Local Producers & Local Production, Aselsan - KOSGEB - OSSA Focus on Boosting SME Business Volume

72 SAHA Istanbul Cluster Holds "Current Incentives Information Meeting" for Members

73 FNSS Employees Awarded for 25 Years of Service

74 Otokar Submitted its BAFO for Altay Serial Production

74 Sedef Vehbi Appointed as Otokar's Deputy General Manager for Military Vehicles International Marketing and Sales

75 "Hızır" Armored Combat Vehicle Successfully Completes Blast Tests

76 "Unmanned and Smart Systems in the Military" Discussions Took Place at Turkey's Technology Based Think Tank 'STM ThinkTech'

77 A Robust Collaboration Among Havelsan and Bites

78 E-Concrete Protocol by SSM

78 A-400M Aircrafts C Level Maintenance Capability Acquisition Ceremony Held in Kayseri

79 SSM and TEI have Signed R&D Projects

79 TAI Signed Cooperation Protocols with 16 Universities

79 FNSS Achieved Export Award for 2017

80 Airbus to Expand its Industrial Cooperation in Turkey

81 Rolls-Royce to Supply Propellers and Mission Bay Technology for UK Royal Navy's Type 26 Global Combat Ship

82 Navantia Selected for Concept Design of the FFG(X) Program for the U.S. Navy

83 Leonardo to Take Part to DIMDEX 2018

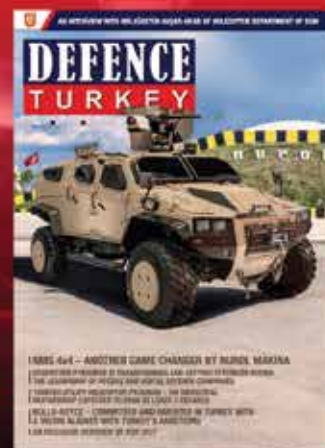
84 First Sikorsky Combat Rescue Helicopter Enters Final Assembly

85 Leonardo: SW-4 Solo Optionally Piloted Helicopter Performs its First Flight with no Safety Pilot Onboard

86 ECA Group Unveils its New Generation Mid-Size AUV A18-M for Underwater Mine Warfare

87 Lockheed Martin Receives \$150 Million Contract to Deliver Integrated High Energy Laser Weapon Systems to U.S. Navy

88 The First Mission of 'Dream Chaser' Spacecraft Approved by NASA



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Turkish Naval Industry's Continued Ascent with Major Naval Programs

Ayşe Evers
Publisher & Editor in Chief

Recent developments in surrounding seas and responsibilities stemming from Turkey's commitments to NATO necessitate having a powerful Naval Force. In furtherance of continuing to create imperative deterrence and to establish stability in an important and fragile geography, Turkey needs continuous modernization of its Navy. The swift conduct of modernization as well as the procurement of advanced weapons/systems is of vital importance toward sustaining Turkish Navy's deterrence capacity.

In recent years Turkey has thrived to advance its naval system policy. A total of 530 Projects executed by the Undersecretariat for Defense Industries has reached nearly \$40 Billion. 300 of these projects are bound by contracts and the remaining 230 projects are under proposal evaluation and signing stages. While the turnover of the Turkish Naval industry reached 21 billion TL from 1.6 billion TL, its rate of fulfilling requirements through domestic resources increased to 60% from 25%. The resources allocated annually to R&D reached \$1.3 billion and with this figure the defense industry has become the industry that invests the most in R&D and technology among the leading sectors in Turkey.

All naval platform projects carried out by the SSM fall under the responsibility of the Naval Platforms Department. There are four Project Groups under the Naval Platforms Department of the SSM; Amphibious Vessels Project Group (currently working on TCG Anadolu LHD, LST, LCT, Logistic Support Vessel and Floating Dock Procurement Projects), Support Vessels Project Group (delivered Oruç Reis Seismic Research Vessel to Mineral Research and Exploration Institute (MTA) in June 2017 and TCG Alemdar Submarine Rescue Mother Ship (MoShip) [in January 2017] and TCG Akın Rescue and Towing Ships (RatShip) [in December 2017] to the Turkish Navy), Fleet Replenishment Ship [DimDeg], Multipurpose Tugboat and Research Vessel Projects), Combat Vessels Project Group (currently working on MilGem, I Class Frigate, I Class Frigate Main Propulsion System Procurement, National Vertical Launching System, Prevezze Class Submarine Mid-Life Upgrade, Barbaros Class Frigates Mid-Life Upgrade Projects) and Patrol Vessels Project Group (currently working on Turkish Type FPBs and Fuel Tanker Projects).

The design activities concerning the long-awaited TF-2000 Anti-Air Warfare Frigate are scheduled to be launched soon. The contracts of the Emergency Rescue and Diver Boat were signed on October 13th and the New Type SAT and Fast Patrol Boat contracts were signed on October 6th. The activities in respect to the Turkish Type Assault Boat and Oil Carrier are underway.

It is stated that projects such as the Harbor Tug Boat, Landing Craft Air Cushion, Unique Design Submarine Conceptual Design, Search and Rescue Boat, Minesweeper Coastal, New Type LCT, 600 Class Coast Guard Boat will be brought to the agenda.

The contract for the second submarine under the Pakistan Navy's Agosta 90B Class Submarine Modernization Project was signed with STM. The modernization activities will include the replacement of the submarine's entire sonar suite, periscope systems, command and control system, radar and electronic support systems. Havelsan and Aselsan-made systems will also be exported as part of the project.



ARES Shipyard's Swelling Wave of Success with Diversified Export Programs

With unprecedented growth, Turkey's illustrious shipbuilder reaps the rewards of export programs that provide tailor-made products. Tempered with cautious optimism and well-deserved satisfaction and national pride, Mr. Kerim Kalafatoğlu - Chairman & Executive Director Of ARES Shipyard discusses the company's high tide of export success and plans for future growth

Defence Turkey: Mr. Kerim Kalafatoğlu, first of all thank very much for your time. During the DIMDEX fair in Doha-Qatar in 2014, you signed a contract with the Qatar Ministry of Interior for the supply of a total of 17 Multi-Role Patrol Craft in 3 different configurations and lengths, and you accomplished the early delivery of 13 boats. In December 2017, the handover ceremony was held for the ARES 150 HERCULES (QC901) Offshore Patrol Vessel which is 48 meters in length and the ARES 110 HERCULES (QC812) Fast Patrol Boat which is 34 meters in length, with the participation of officials from the Qatar Coast Guard Command and the Ministry of Interior in Antalya. You have strong competitors; could you please evaluate the tender process in which you are involved? Also, please discuss the preliminary preparation and mass production processes that lead you to success in delivery?

The tender process for this record-breaking program was certainly a challenge. It took some five years from the beginning to the point of the award with lots of engineering, marketing and product development efforts. ARES Shipyard won the tender and was awarded in year 2014 among a total of 18 international shipyards competing, some of them being the giants of the world at that time with their production volume. There was no big secret behind this success; we proposed the best technical solution with a completely cooperative proposal in terms of customization for the specific needs of the end users. And therefore, we had an almost one-year design consolidation and customization phase for the three types of fast patrol and offshore patrol vessels. At the end of the critical design review, we had fully customized, satisfactory and state-of-the-art products on the table, ready for production. It was time for developing the infrastructure, investing in the shipyard for even faster and higher quality deliveries. It was time to achieve something that had not been

done by then: serial production of advanced composites military craft with fully automated vacuum infusion technology and use epoxy resin. This technology required a significant amount of investment in production however at the same time led us to deliver the best quality, in 1.5 years ahead of the contractual schedule with flawless planning, which is quite unusual in the shipbuilding business.

Defence Turkey: ARES Shipyard – Turkey's largest ship exporter - is Europe's largest composite-hull boat manufacturer and the world's biggest composite hull patrol craft manufacturer as well. ARES Shipyard is the only shipyard with the capacity to build military vessels with full vacuum infusion technology and epoxy resin utilization. What types of advantages have you gained as a result of your know-how in the production phase? In addition, what are the capabilities and advantages brought to the end users?

Our extensive know-how in production led us to build the largest composite hulls in military craft production with the highest durability and with the longest life time which are the biggest concerns of the navies and coast guard institutions. Furthermore, the high quality of these products has granted us the freedom to offer record breaking warranty periods to our clients. Regularly proposed warranty periods in shipbuilding is limited to one year where we can provide 20 years of warranty for our advanced composite hull structures, and where we believe that ARES is the only shipyard in the world that can achieve this level of reliability.

Defence Turkey: Mr. Kalafatoğlu, you have signed Turkey's largest military ship export contract up until now for the procurement of 17 composite-hull Qatari Coast Guard Boats. What do you want to say about the added value and achievements this program has brought to our country?

Considering the current global recession, this huge export

program brought in a significant amount of foreign exchange to Turkey, adding considerable value to its reserves and creating employment. On the other hand, even though this program for the Qatar Ministry of Interior is the largest military ship export contract contributing to our export figures, ARES has always been an export focused company for the last ten years. So, our export figures not only stem from this record-breaking contract but also cumulatively coming from our diversified export programs to countries including but not limited to Qatar, Bahrain, Nigeria, Turkmenistan, Georgia and Tanzania.

Defence Turkey: Mr. Kalafatoğlu, in the Qatari Coast Guard Boats supply program, you are 18 months ahead of the delivery schedule and this an unprecedented delivery achievement in the defense & maritime industry up to now. Here, we are talking about a significant supply chain and finance management modality. Your shipyard provides flexibility and speed through the supply management and logistics approach that you have established. Could you briefly tell us about your investments and studies in this regard?

Today, we are 1.5 years ahead of the contractual schedule with a flawless planning, logistics and financial management in addition to our investments in serial production which is quite unusual in shipbuilding business. Especially in supply chain and financial management fields, we have also made significant investments in terms of assets and manpower. To be more specific, we have changed our management methodology dramatically with the use of a new ERP software, supply chain and finance being the first to be integrated in this ERP system. Moreover, we have invested in people creating significant value in these fields. And above all, we have made all these systematic development efforts and manpower work together in harmony.

Defence Turkey: Mr. Kalafatoğlu, the ARES 150 HERCULES Offshore Patrol Vessels bring significant advantages to the user in the operational environment, thanks to the speed over 20% of the contract requirements, superior maneuvering capability in a 74 meter-radius, and an enhanced range. When you compare the ships in this class with your own platform, how do you see your platform in terms of both cost-effectiveness and superiority?

The 48m ARES 150 HERCULES OPV is the flag ship of this program and the Qatari Coast Guard. So, we have from the beginning planned and wished to add even more value to this craft, to distinguish it from other offshore patrol vessels currently in service across the globe. Therefore, first of all we offered to the client, an upgrade of the main propulsion system (main engines and water jets) to a more improved solution on our account. With this revision, we added a 20% increase in speed, higher maneuverability and then doubled the range (from 800Nm to 1600Nm) giving the coast guard even more enhanced patrolling capabilities covering all of the Arabic Gulf region with its high speed and extensive range. What we have achieved with the ARES 150 HERCULES is unprecedented; it is the fastest offshore patrol vessel and largest composite construction for military use in the world. Finally, with the addition of stabilization systems for higher sea states up to and including Sea State-6, two interceptor boats onboard for special forces missions, new generation electro optic systems and Aselsan's 30mm SMASH (MUHAFIZ) and two 12.7mm STAMP Naval Weapon Systems; the ARES 150 HERCULES is a unique, superior, state-of-the-art craft.

Defence Turkey: According to the contract signed with the Qatar Ministry of Interior, when the boats are delivered, the operator and maintenance training will be provided to the Qatar Coast Guard Command staff by the ARES ILS Department. Could you please share with us the latest status of the studies performed in this context?



34m Length-ARES 110 HERCULES

As a company that attracts attention with the impact and difference it makes in the industry, one distinguishing feature of ARES is its Integrated Logistics Support (ILS) department. The ILS department, whose effectiveness and know-how has been certified, is currently providing training to 275 Qatari Coast Guard personnel for almost three years. Thanks to our ILS team, ARES stands out as the sole shipyard in Turkey to meet all the logistics-related demands and requests of customers. Certified by Turkish Lloyd with the ISO 9001 Quality Certificate, our ILS department has experienced personnel and know-how to meet every kind of customer requirement at the shipyard or onsite, at any requested location in the world. Currently, the extensive training program for the Qatar Coast Guard is on-going with accomplishment of 12 boat crews (approximately 170 officers, petty officers and technicians) all in-class, onboard and tactical/mission training.

Defence Turkey: During the recent period, ARES Shipyard has exported military and paramilitary ships to countries like Bahrain, Nigeria, Georgia, Tanzania and Turkmenistan.

However, especially with the superior success you have achieved in the Qatar Coast Guard Boat procurement project, the requirements you receive in the international market will certainly increase. In this context, could you please inform us about the projects you follow abroad, co-operation activities and the requests you receive?

There are numerous international shipbuilding / acquisition programs to which we have been invited which we are either actively following, preparing for, or are waiting for the outcome of after having already submitted our proposal. As you may realize, most of them have military level confidentiality; there is also commercial confidentiality involved in some others. For these reasons, we think it would not be appropriate, as a matter of principle, to mention any country or project name before the relevant tenders are concluded. My wish and hope is that we will continue to win new tenders and get orders in 2018, and meet the needs of our allied countries with the highest value platforms of their class, contributing to export incomes of the Turkish Republic as our usual practice.



48m Length -ARES 150 HERCULES OPV



Precision Guided Weapon Systems





© ARES Shipyard

48m Length – ARES 150 HERCULES - Wheelhouse

Defence Turkey: Mr. Kalafatoğlu, unlike many other producers, you do not offer commercial off-the-shelf products to the market. What advantages does this approach bring to you in the market?

Of course, almost all shipyards in the industry claim that they make the fastest delivery and carry out production at the most reasonable cost, with the highest quality and advanced technology standards in materials and workmanship. This is indeed a common goal for all companies in the industry. Managing these factors appropriately is essential for the survival of enterprises. In addition to all these factors, and more importantly, I believe that we, as ARES Shipyard, have contributed a different perspective to the ship building industry. Our vision is not limited to building the best ships; our aim is to develop our customers' own vision by working together with them. That is to say, we listen to the needs of our customers, and value their requests. We never offer them a ready platform and try to persuade them to buy it. We evaluate their operational needs by sitting face-to-face and determining the optimum solutions and most appropriate technical features for them. In other words, we offer them a consultancy service, gladly and free of charge, unlike in many other countries where such services are provided to government institutions for considerable sums during the preparation of tender dossiers. At this point, there are, of course, cases where it is our customers

that guide us. In this way, we can provide a win-win solution. As the saying goes, rather than an off-the-peg jacket, we tailor one for our customer that is made-to-measure, so it fits perfectly. We call this approach tailor-made solutions. As a result, we don't offer any off-the-shelf products to our customers. Instead, and I say this with pride, we have a number of solutions we can offer them. Of course, producing tailor-made solutions for customers requires a labor intensive chain of design activities. But with our young and dynamic design team, we are aiming to pursue this strategy, and to continue serving our customers with the most appropriate solutions by working together with them.

Defence Turkey: Do you have solutions and designs that are scaled according to the future requirements of our country, the Coast Guard Command being in the first place, in view of the gains this project brings to you? Could you please inform us about the tender you are expecting to be issued or the tender you have submitted for your proposal?

The needs of the Turkish Naval Forces and Coast Guard Command are always a priority for us. Beyond meeting financial targets, and in addition to bringing foreign exchange to Turkey, our biggest goal is to continue and increase our services for the Navy and Coast Guard institutions of our homeland. We are always ready to support all programs of the Turkish Ministry of Defense and Ministry of Interior, as far as our capacity allows us to do. Thus, for instance I'd like to announce here that we will proudly be participating in the tender for the needs of Ministry of Interior, Coast Guard for fast response and control boats recently issued by the Undersecretariat for Defense Industries. I'd like to assure you that we will do our utmost to present the highest performance and efficiency product in a very competitive delivery schedule, being aware of the urgency of the need especially for the fight against illegal immigration and human trafficking in our territorial waters.

Defence Turkey: Mr. Kalafatoğlu, you had a teaming agreement with Rolls-Royce for the Turkish-type assault boat project. Within this scope, you have designed your ship on the Rolls-Royce's patented, tried and proven P2500 body form. Could you please inform us on the latest developments regarding this platform solution, the partnership and process?

I would like to take this opportunity to underline the fact that we are one of the strongest candidates for the Turkish Type Fast Attack Craft Program in context of the modernization of the Turkish Naval Forces FAC Fleet. We had a teaming agreement with Rolls Royce in order to use their unique very well



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proven P2500 hull form that allows both high performance and speed capability above 55 knots with a steel hull but at the same time achieving very reliable seakeeping parameters at Sea State 6. I can proudly state that we are fully ready for the program even in terms of detailed ship configuration and design. We are fully compliant with the principles previously published in the RFI, and in expectation of the RFP to be issued by Undersecretariat for Defense Industries in order for us to take place in this important program.

Defence Turkey: You were ranked as Turkey's number one fastest growing company with a growth rate of over 4000% according to the industry's independent assessments made by the Turkey Union of Chambers and Commodity Exchanges in January 2017. It gives you both great pride as well as great responsibility. In this regard, what are the strategies that you have adopted in order for this growth to be sustainable?

ARES has achieved tremendous success by growing at astronomic rates in the last decade. We are certainly delighted and proud of this; but at the same time, we are equally cautious and careful. We are aware that while such rapid growth rate can be a source of both pride and self-confidence, it also carries certain risks. By managing them effectively, I believe that we have the experience and vision to turn these risks into advantages. As such, rather than comforting us, this growth rate has disciplined us; I can say that it has even inspired and encouraged us to further strengthen our institutional structure. Our biggest goal for the coming period is of course to ensure the continuity of the growth in our sales revenues. Meanwhile, we should also ensure more stable growth rates and strive to eliminate the positive and negative peaks. We have set a modest and feasible target for our annual turnover, 90% of which comes from exports. Our goal is to increase it by at least 300% within next five years, with stable and consistent growth rates. As such, by the end of 2017, we have already accomplished an export value of over \$125 million.

Defence Turkey: Mr.



Turkish Type Fast Attack Craft – ARES 63 Atılgan

Kalafatoğlu, you have an investment plan in 2018 that can increase the indoor production capacity of your shipyard and perform the production of larger and tonnage military vessels. What do you want to say about this modern facility that will be built?

Our current production facilities in Antalya Free Zone currently comprise three air-conditioned factories with a combined floor area of 25,000 square meters. As well as construction facilities for aluminum, steel and advanced composite hulls and superstructures, we have paint ovens; workshops for metal, carpentry and composite works, and harbor launch capability. We have also modern offices, and training classrooms for the support of customers in addition to the private offices dedicated to our customer representatives. We have recently invested in a new facility next to our composite factory which will increase our enclosed

production area to 40,000 square meters in less than one year. This brand new top-notch facility will be specialized in aluminum and steel production infrastructure and will add significant value to our country with the investment of robotized cutting-edge serial production capability.

Defence Turkey: Would you like to convey any messages for the readers of Defence Turkey?

I would like to take this opportunity to express my gratitude to all our staff, from workers to the executive board members, as well as our program stakeholders, for all the efforts they have put into the successful execution of our projects, enabling us to reach these achievements. I also would like to thank the respectable Defence Turkey team for covering ARES Shipyard in this issue, and for the contribution to raising our existing awareness and recognition in the industry ■



LAND DEFENCE SYSTEMS HOUSE OF TURKEY





Turkish Naval Forces – Dependable in Cooperation, Deterrent in Crises and Decisive in Combat

“The one who rules the seas, rules the world”, is a well-known excerpt attributed to Barbaros Hayrettin, Grand Admiral of the Turkish Fleet in the sixteenth century. The main point, which we would all agree upon is that, Sea Power was in the past, still is today and will be in the future, at the core of world order. The one who dominates the sea also happens to rule over the world, nations who best utilize this potential, dominate the global system.

Over 150 of the 193 United Nations member nations are coastal states. 75% of the world population, more than 80% of the world's capital and approximately all global trade and military power centers are located near coasts. Maritime transportation is much cheaper in comparison to land, air or railway transportation. 90% of the world's trade is seaborne and 75% of that trade passes through a limited number of choke points and international straits.

The 21st century is the maritime era where the sea promises unlimited resources and connects the entire world. Nations depend on their navies to safeguard their maritime interest and secure sea routes. Over the years, thanks to their inherent flexibility, which they offer to governments, navies have become the key instrument for the implementation of state action at sea. When duty calls, navies can deliver. This very fact has been time-proven. Though the number of organizations involved in maritime security has been increasing over the last couple of decades, navies are still the most competent agencies in many littoral countries.

In the past, the main use of the maritime domain was its ease of

transportation and trade. Maritime strategies focused mainly on sea control and maritime security and it was a matter of power and usually a concern of one actor. But today, besides basic trade and transportation, seas offer littoral/peninsular countries a wide range of economic activities, ranging from energy production from water and wind to deep sea drilling for hydrocarbon reserves. These economic activities in maritime jurisdiction areas have become one of the leading causes of interstate conflicts these days.

Turkey's Geostrategic Position and the Turkish Navy's Responsibilities

Turkey lies where three continents meet. Surrounded by three seas from the North (Black Sea), South (Aegean Sea) and West (Mediterranean Sea) Turkey has a coastline of 8,484km. Its geo-strategic position and geopolitical situation obliges Turkey to be a maritime state and dictates it to have and sustain a powerful naval force.

As a peninsular state, Turkey is thoroughly dependent on the seas. More than 50% of the population lives in coastal areas, 95% of import and export goods are carried by sea and 75% of Turkey's petroleum traffic is carried over the Aegean Sea. Turkish Straits do not only provide a vital link between Turkey's maritime flanks but also constitute a major artery for global economy. On any given day, an average of 110 merchant ships over 500 gross tons sail through Turkish Straits. An annual average of 100 million tons of commercial goods are freighted by sea transportation to and

from Turkish ports. The annual sum of petroleum products, carried by the tankers passing through Istanbul and Çanakkale Straits, is around 140 million tons. The introduction of the Baku-Tbilisi-Ceyhan Pipeline, carrying Caspian oil to the Eastern Mediterranean into world markets has considerably increased the strategic importance of the Bay of Iskenderun and on a larger spectrum, the Eastern Mediterranean. In order to provide security for the increasing tanker traffic at sea following the activation of the of the Baku-Tbilisi-Ceyhan Pipeline, starting from April 1, 2006 a national Maritime Security Operation named 'Mediterranean Shield' in the Eastern Mediterranean was launched.

The Turkish Straits and surrounding seas are not only arteries for the Turkish economy, but also act as a bastion for the security of the state. During the last couple decades, tectonic changes have been taking place in the global security environment and the effects of these changes are directly felt in the surrounding seas of Turkey. Living in a neighborhood that is adjacent to the Balkans, Caucasus and the Middle East, poses security challenges and risks for Turkey. In order to adapt itself to changing security environments the Turkish Navy has been continuously transforming itself, restructuring its organizational structure and it carries out new tasks against the challenges of the new security environment, while maintaining and enhancing conventional naval capabilities. The force and command structure of the Turkish Navy now provide the essential elements to perform both conventional naval tasks as well as those that are constabulary.



© Turkish Naval Forces

Addressing the Pakistan Navy War College on February 17, 2016, the then Commander of the Turkish Naval Forces Admiral Bülent Bostanoğlu summarized the current situation from the Turkish Navy's point of view with the following words; "As we have recently witnessed, there are many regional and global naval actors competing in the maritime domain. Increased competition for maritime goods and unlawful territorial claims add fuel to this complex maritime domain. In this picture, our navies must always be ready to prevail in combat. Hence, we shall always keep our priority and purpose of our navies' existence in mind. As Turkey, we don't have the luxury of degrading core capabilities, especially in the face of the unstable Middle East and North Africa (MENA) region, the developing situation in the Eastern Mediterranean including Syria and the on-going crisis in Ukraine."

The Turkish Navy's primary mission is to defend the country

against all maritime threats and risks and to protect its maritime interests both in peace and crisis time while contributing to the maintenance of peace and stability in the region. In this context, in peace and crisis time, the main tasks of the Turkish Navy are:

- › Peace Support Operations
- › Search & Rescue Operations
- › Participation in Humanitarian Assistance & Disaster Relief Operations
- › Constabulary Operations
- › Protection & Control of Maritime Jurisdictional Areas
- › Non-Combatant Evacuation Operations
- › Presence & Flag Show
- › Sea Control & Sea Denial Operations
- › Protection of Sea lanes of Communications and
- › Power Projection

In order to effectively execute those tasks, the Turkish Naval Forces Command (TNFC) is organized into four major subordinate commands, which

includes; Fleet Command (Gölcük, Kocaeli), Northern Sea Area Command (Istanbul), Southern Sea Area Command (Izmir) and Naval Training & Education Command (Istanbul). As part of on-going transformation efforts starting from 2011 within the Fleet Command three separate Task Group Commands (namely North, South and West) have been formed. And finally, in 2015 in order to assure coordination and cooperation among those three Task Group Commands, the War Fleet Command (which covers frigates, corvettes and fast patrol boats) was established and subordinated to the Fleet Command. Today, the Fleet Command, which constitutes the striking power of the Turkish Naval Forces, is the largest of the naval components and consists of: War Fleet Command, Submarine Fleet Command, Mine Fleet Command and Naval Aviation Command.

During the early stages of the Republican era, the Turkish Navy had only 23 naval platforms (including Yavuz battle cruiser with a full load displacement of 25,400 tons) with a total displacement of 48,000 tons. Today, the Turkish Naval Forces, with its 55,000 personnel, three naval ship yards (Gölcük, Istanbul and Izmir), over 150 naval platforms (both surface and underwater) with a total displacement of around 260,000 tons, some 50 air assets (fixed wing and rotary wing platforms), an amphibious naval infantry brigade, and special operations teams (comprising 12 SAT (Underwater Offence) Teams, 15 SAS (Underwater Defense) Teams and 3 Rescue Teams) is a formidable navy on the world stage. The Turkish Navy, with increasing effectiveness and synergy with other services and allies, is nowadays capable of conducting both Brown and Blue Water Operations. Today, the warships of the Turkish Navy wave the Turkish flag with great pride on the world seas from Sea of Japan to the Baltic Sea, from Persian Gulf to Somali Basin, from Gibraltar to Panama, and from the North Atlantic to the Indian Ocean. As one of the most respected, powerful and capable navies in



© Turkish Naval Forces

TCG Gemlik Seaboat approaching and assisting a Yemen fishing vessel

the Mediterranean, the Turkish Naval Forces will continue to fly the glorious Turkish flag on the high seas. Speaking at TCG Anadolu (L-400) Multi-Purpose Amphibious Assault Vessel (LHD)'s first steel cutting ceremony held on April 30th, 2016 at Sedef Shipyard in Tuzla, Istanbul, the then Commander of the Turkish Naval Forces Admiral Bülent Bostanoğlu underlined that with the existing medium scaled regional force projection capability and land attack/penetration capability the Turkish Navy is now listed among the top 15 navies of the 162 navies in the world and with the commissioning of TCG Anadolu in 2020s, the Turkish Navy is to rise up into a higher class and will have a higher place in this ranking.

Counter Piracy Operations & Contributions to Regional and Global Peace

Stable maritime security is closely linked to the presence of Sea Power and navies provide presence all over the world for this purpose. However, in the 21st century, no single nation alone has the capacity to provide freedom of navigation, keep sea-lanes open, safe guard the vital links in the world and thus protect and defend the global order. So, it is self-evident that nations that thoroughly dependent on the seas must work together.

Since 2006, there has been a significant increase in piracy incidents all around the world, especially in the Red Sea, Gulf of Aden, Arabian Sea, Persian Gulf and Somalia Basin. Considering the fact that 95% of import and export goods of Turkey are carried by sea and nearly a quarter of Turkey's foreign trade is transported using Turkish ships or with those connected with the country, protection of the maritime trade routes is of vital importance for Turkey. Speaking at the TBMM in February 2018, Turkish Minister of National Defense Nurettin Canikli underlined that Turkey has been performing exports and imports with 33 countries around the world and every year around 1,000 commercial ships with the Turkish Flag have been passing through this route



Turkish MILGEM Corvette (F-511) "Heybeliada"

[Red Sea, Gulf of Aden, Arabian Sea, Persian Gulf and Somalia Basin] and realize 20% of the Turkey's foreign trade volume.

That is why the Turkish Naval Forces support counter piracy operations in the coasts of Somalia and the Gulf of Aden under the framework of the United Nations Security Council (UNSC) and the Grand National Assembly of Turkey (TBMM) resolutions. Since 2009, Turkish Navy frigates and corvettes have been participating in the multinational naval task force dubbed the Combined Task Force 151 (or CTF-151) and in Operation Ocean Shield (CTF-508). The CTF-151 has been established under the leadership of the USA and NATO as a response to piracy attacks in the Arabian Sea and the Gulf of Aden and so far, some 200 pirates have been neutralized during the operations. Since 2009 the Turkish Navy has executed the command of CTF-151 on five occasions and the command of Operation Ocean Shield (CTF-508) on two occasions. Turkey is the only country, which always assigns elements/platforms to Standing NATO Maritime Groups. The Turkish Navy considers continuing to participate in Counter Piracy Operations under the command of CTF-151 and/or CTF-508 (Operation Ocean Shield) during certain periods of the year in the Horn of Africa and the Indian Ocean. Meanwhile, in February 2018, the Grand National Assembly of Turkey extended the deployment of the Turkish Naval Forces in the Gulf of Aden, the Arabian Sea, and adjacent

seas to halt piracy for another year. The parliament's approval of a government motion dated February 10th, went into force after being published in the Official Gazette on February 13th. Accordingly, the Turkish Naval Forces' mission has been extended for one more year from February 10, 2018.

The Turkish Naval Forces attaches utmost importance to cooperation and bilateral relations in order to support global peace and stability. During counter piracy operations the Turkish Naval Forces has interacted with the navies of friendly and allied nations and improved the level of cooperation with them. By participating in NATO naval operations (such as Operation Active Endeavour, CTF-151 and Operations Ocean Shield), UN operations (such as UNIFIL Maritime Task Force Operations) and in the current regional initiatives and operations (such as BlackSeaFor, Operation Black Sea Harmony and Operation Mediterranean Shield) the Turkish Naval Forces has been contributing not only to the maritime security of Turkey's export and imports but also to global stability and peace in the context of regional cooperation and bilateral relations. The success of these multi-national initiatives has shown that collective action, namely collaboration, delivers results.

In addition to the above-mentioned NATO naval operations and UN operations, during the past few years the Turkish Navy has also carried out some unique deployments and missions such as;

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- › TCG Heybeliada Corvette's deployment to North Africa and Mediterranean Sea in 2013. Port visits were conducted to some of the North African and European countries between June 10 and July 12, 2013.
- › Barbaros Turkish Maritime Task Group Deployment to the African Continent during March 17 and June 27, 2014; Comprised of 2 frigates (TCG Oruçreis and TCG Gediz), 1 corvette (TCG Heybeliada) and 1 fleet replenishment ship (TCG Yarbay Kudret GÜNGÖR), Barbaros Turkish Maritime Task Group performed 25 port visits to a total of 24 countries (19 of these countries were visited for the first time by the Turkish Naval units) on the African continent. Turkish Maritime Task Group deployment was not scheduled for 2016, but the Turkish Navy plans to reactivate the Group in the future in line with political guidance and taking into account the proceedings in the surrounding seas.
- › TCG Buyukada Corvette's deployment to the Persian Gulf during January 26 and April 19, 2015.
- › TCG Gediz Frigate's deployment to the Far East between April 1 and July 31, 2015 as part of the commemoration for the 125th anniversary of Ottoman Frigate Ertuğrul's voyage to Japan.

These deployments are examples of the Turkish Navy's outreach to make friends and allies and to foster international cooperation and partnerships for maritime prosperity. Furthermore, with its prospective platforms like TCG Anadolu (L-400) Multi-Purpose Amphibious Assault Ship (LHD) and the naval aviation capability with a wide range of helicopters to include medium sized and heavy utility helicopters as well as attack and ASW/ASuW helicopters and F-35B Lightning II STOVL jets, the Turkish Navy will be able to project power to longer distances and will be robust and act as a deterrent as it has never has before. With the commissioning of TCG Anadolu (L-400) LHD, the Turkish Navy would be able to avert the current regional force projection capability into the medium scaled global force projection capability.



TCG (F-495) "Gediz" and TCG (F-245) "Oruç Reis"

Turkish Naval Forces' New Strategy Document & Future Plans

The Turkish Naval Forces Command has prepared a new strategy document and issued the Turkish version on its official website in October 2015. The Turkish Naval Forces Strategy document, which was published for the first time ever, will soon be available in English. During his address at the Pakistan Navy War College on February 17, 2016 the then Commander of the Turkish Naval Forces Admiral Bülent Bostanoğlu highlighted the major points of this document;

"Turkey is exposed to the negative impacts of numerous on-going crises in the north of the Black Sea and in various hot spots throughout Turkey's southern borders. Furthermore, historical disputes in the Aegean and the growing tensions in the Eastern Mediterranean are prone to result in further crises. These existing and potential crises may well continue to impact Turkey's security situation. This very fact will be the major factor in the Turkish Navy's operations and force posture in the next 5-10 years. The challenge in the Black Sea will be to restore stability and mutual confidence among the littoral states, both of which were hampered with the outbreak of Ukrainian crisis.

The Turkish Navy will continue promoting regional ownership and regional naval mechanisms, such as Operation Black Sea Harmony.

Simultaneously, NATO's assurance measures that are tailored according to the evolving security situation and threat perception will continue to be supported actively. In the Aegean, the Turkish Navy will continue to foster friendly and Allied relations, as well as confidence building measures. At the same time, we will keep our deterrent posture to prevent attempts that will change the status quo and restrict the use of the high seas.

The Turkish Navy's main area of concentration will be the Eastern Mediterranean due to the on-going disputes on delimitation of maritime jurisdiction areas. On-going crises with Russia have also increased the already sensitive situation in the Eastern Mediterranean. However, the Turkish Navy will continue to be a responsible actor in its endeavors in the region. We will, nevertheless, continue to actively protect Turkey's maritime rights and interests in our maritime jurisdiction areas.

Promoting regional and global peace and stability will be the primary engagements of the Turkish Navy beyond Turkey's surrounding seas. We will continue to secure Sea Lines Of Communications (SLOCs) frequently used by Turkish merchant fleet, support Turkish foreign policy as required and, contribute to the Alliance Maritime Strategy under national, alliance or coalition structures."

As stated in the Turkish Naval Forces Strategy, Turkey's foreign policy vision is based on stability, cooperation and continental scale

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initiatives. Due to its mobility capabilities, these objectives have established the Turkish Naval Forces as an indispensable foreign policy instrument that has access to all regions, including neighboring waters and oceans, in line with Turkey's areas of interest and activities.

MoND General Directorate of Shipyards [TGM]

It should be noted that as part of the restructure efforts that were launched following coup attempt, on July 15, 2016, with an amendment made on the 1st Article of Law on Ministry of National Defense (MoND) military factories and shipyards have been removed from the structure of related Military Departments and General Staff organization and affiliated under the MoND. In this context Naval Shipyards; Istanbul Naval Shipyard, Gölcük Naval Shipyard and İzmir Naval Shipyard, have been affiliated under the newly established MoND General Directorate of Shipyards [TGM]. Following the completion of organizational efforts in late 2017 the MoND General Directorate of Shipyards comes into operation in January 2018 together with all of its sub-departments. As of October 2017, the number of personnel working at Naval Shipyards is 6,500.

According to MoND General Directorate of Shipyards during 2017-2034 a total of 88 naval vessels in various types and including submarines would be constructed in Turkey to meet the requirements of the Turkish Navy and the Coast Guard. 13 of them



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would be constructed at Naval Shipyards (2 x Ada Class [3rd and 4th Corvettes], 1 x I Class Frigate, 1 x TF-2000 Air Defense Warfare Destroyer, 1 x TF-100 Frigate, 6 x Type 214TN Reis Class AIP Submarines and 1 x National Submarine [MilDen]) and 75 of them would be constructed at Private Shipyards.

Turkish Naval Forces' Modernization Programs & Local Solutions/Capabilities

Recent developments in surrounding seas and responsibilities stemming from Turkey's commitments to NATO necessitate having a powerful Naval Force. In order to continue to produce deterrence and create stability in an important and fragile geography Turkey needs continuous modernization of its Navy. The swift conduct of modernization as well as the procurement of advanced weapons/systems is of vital importance for sustaining

TCG (F-513) "Burgazada" Launch Ceremony the Turkish Navy's deterrence capability.

The lessons learned from the past have proven that having a powerful and capable navy depends not only on the imported weapon and sensor systems but also on the capacity of both the national defense industry and the Turkish military shipbuilding sector. The Turkish military shipbuilding industry (comprising both Naval Shipyards and Private Shipyards) has achieved a considerable success especially over the last 15 years, and now is able to carry out the design, construction and system integration of all types of surface and underwater naval vessels (both in manned and unmanned configurations) in local shipyards using indigenous capabilities and infrastructures with a local content ratio of 70%.

The Undersecretariat for Defense Industries (SSM), Turkey's defense and security procurement agency for the Turkish Armed Forces (TAF), Turkish Gendarmerie General Command (TGGC), the Turkish Coast Guard Command (TCGC), with State of Emergency Decree Law No. 668 issued on July 25 and published in the Official Gazette on July 27, 2016, the TGGC and TCGC have been affiliated under Ministry of Interior following the coup attempt, the Security General Directorate (SGD, Turkish Police) and the Turkish National Intelligence Service (MIT), has been overseeing the latest naval projects, which were launched as part of Turkish Naval Forces' on-going modernization program. The main goal of the on-going modernization program



© SSM

The Construction of TCG Anadolu LHD is proceeding at Sedef Shipyard

is to create a modern, versatile, interoperable and deployable navy through exploiting local defense infrastructure and also facilitating international cooperation.

All naval platform projects carried out by the SSM fall under the responsibility of the Naval Platforms Department. As of October 2017, the total value of the 28 shipbuilding projects that the Naval Platforms Department have been conducting is over US \$12 Billion. There are four Project Groups under Naval Platforms Department of the SSM; Amphibious Vessels Project Group (currently working on TCG Anadolu LHD, LST, LCT, Logistic Support Vessel and Floating Dock Procurement Projects), Support Vessels Project Group (delivered OruçReis Seismic Research Vessel to Mineral Research and Exploration Institute (MTA) in June 2017 and TCG Alemdar Submarine Rescue Mother Ship (MoShip) [in January 2017] and TCG Akin Rescue and Towing Ships (RatShip) [in December 2017] to the Turkish

Navy), Fleet Replenishment Ship [DimDeg], Multipurpose Tugboat and Research Vessel Projects), Combat Vessels Project Group (currently working on MilGem, I Class Frigate, I Class Frigate Main Propulsion System Procurement, National Vertical Launching System, Preveze Class Submarine Mid-Life Upgrade, Barbaros Class Frigates Mid-Life Upgrade Projects) and the Patrol Vessels Project Group (currently working on Turkish Type FPBs and Fuel Tanker Projects).

The platform projects to be mentioned will be realized at domestic naval and private shipyards and facilities aiming at maximum contribution from national industry thus creating employment opportunities.

Ada Class Corvettes

Constructed under the MilGem (National Vessel) Program, Ada Class Corvettes are wholly indigenous patrol/anti submarine warfare (ASW) vessels, designed

to meet specific requirements of the Turkish Navy in terms of speed, seakeeping and stability. Originally a total of 12 (8+4) vessels was planned to be constructed under the MilGem Program but as a result of changes in the Turkish Naval Forces Command (TNFC)'s operational requirements current plan envisages a fleet of four ships. All of design, integration (also covers the combat systems integration) and analysis studies for the MilGem corvettes have been performed at the Istanbul Naval Shipyard Command with the participation of both military and civil engineers. The first ship of Ada Class Corvettes TCG Heybeliada (F-511) was commissioned on September 27, 2011 while the second vessel TCG Büyükaada (F-512) was commissioned on September 27, 2013. Construction of the third and fourth vessels TCG Burgazada (F-513) and TCG Kınalıada (F-514) are continuing at the Istanbul Naval Shipyard Command. Provisional acceptances of TCG Burgazada

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Below the main text, there is a row of seven circular icons representing various naval technologies and systems: a ship, a sonar, a radar, a missile, a submarine, a helicopter, and a globe. Below these icons is a row of five silhouettes of different types of naval vessels, including frigates, corvettes, and submarines.

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and TCG Kinalıada Corvettes are scheduled to take place in 2018 (September 27, 2018) and in 2020 respectively. Final acceptance of these two ships will take place after a 12-month guaranty period in September 2019 and in March 2021. Compared to first two ships, which are equipped with nationally developed combat management system, namely GENESIS, the third and fourth corvettes will be integrated with the GENESIS ADVENT combat management system (CMS). MilGem, is a concept which enabled domestic production and development of critical technological systems such as; GENESIS and GENESIS ADVENT CMS, YAKAMOS-1 hull mounted medium frequency active/passive sonar, 76mm gun fire control system, LPI radar, 12.7mm stabilized gun system, degaussing system, IR signature management system and laser warning system.

The Ada Class Corvettes have a mono-hull, displacement-type hull form. Their overall length is 99.5 meters, maximum beam is 14.4m, displacement is 2,300 tons (2,450 tons with full load) and their range at economic speed is around 3,500 nautical miles. Ada Class Corvettes accommodates a 10-ton helicopter (S-70B SeaHawk) with platform, hangar and extensive service and handling equipment. With their 32MW propulsion power, generated by one gas turbine (LM2500) and two diesel engines (CODAG system configuration), Ada Class Corvettes can reach 31 knots.

According to SSM figures, each Ada Class Corvette costs around €250 Million to Turkey.

I Class Frigates

Due to the high average age of the existing frigates in the Turkish Naval Forces inventory, as well as the increases in national, NATO and international tasks, which are carried out mostly very far from the Turkish homeland, the I Class Frigate Program was launched. As the extended and enhanced version of Ada Class Corvettes, the I Class Frigates will have an increased fuel capacity around 50% and a cruising range capability compared to Ada Class Corvettes. In line



GENESIS ADVENT Combat Management System (CMS)

with the changing and developing requirements of the Turkish Naval Forces Command, the I Class Frigates will be equipped with a 16-cell Mk41 VLS (behind the 76mm Super Rapid gun on the bow) for a total of 64 Evolved Sea Sparrow Missiles (ESSMs), 16 Harpoon Block I/II and Atmaca surface to surface/land attack missiles, electronic attack capability and network enabled combat management system namely 'GENESIS ADVENT'. The I Class Frigates' overall length will be around 113 meters and their displacement will be around 3,000 tons.

The Istanbul Naval Shipyard is responsible for the design and the construction of the prototype ship. Construction of the first ship of the class, TCG Istanbul (F-515), was officially launched on January 19th, 2017 at the Istanbul Naval Shipyard with a steel cutting ceremony. TCG Istanbul frigate is planned to be operational in 2021. The other three sister ships (TCG Izmir, TCG Izmit and TCG İçel), are planned to be constructed in private shipyards and will follow in 2022, 2023 and 2024.

TCG Anadolu LHD

After a long and hard negotiation process that launched soon after the tender was awarded on 27th December 2013, during IDEF '15 Fair on May 7, 2015, the Turkish private shipyard Sedef signed a contract with SSM for the design and construction of one LHD ship, to be based on ATHLAS 26,000/Juan Carlos I LHD design, for the Turkish Navy, where Navantia is a participant as a technological partner. The contract that became effective on September 18th, 2015 covers the construction and the delivery of one LHD ship, four LCM-1E Landing Craft Mechanized (LCMs), two Landing Crafts Vehicle and Personnel (LCVPs), two Rubber Hulled Inflated Boat (RHIB) and one Command Boat. The main milestones of the program are the 1,000 tons of steel cutting at T0+8 months, the launching at T0+40 months, and the temporary delivery at T0+67 months, with final acceptance after a 12-month guaranty period.

Construction of the TCG Anadolu (L-400) Multi-Purpose Amphibious Assault Vessel (LHD) will be the biggest ship and





displacement that the Turkish Navy has ever had, was officially launched on April 30th, 2016 at Sedef Shipyard in Tuzla, Istanbul with a steal cutting ceremony. TCG Anadolu (Anatolia) will be constructed with 68% local content share and is scheduled to join the fleet in 2021. Navantia will provide Sedef Shipyard with the design of the TCG Anadolu LHD and the LCM-1Es as well as the Purchase Technical Specifications for the procurement of all materials and equipment.

Though TCG Anadolu LHD (L-400)'s design is based on the LHD Juan Carlos I/Canberra Classes already in the services of Spanish and Australian Navies, it will have certain differences from these platforms in order to meet the Turkish Navy requirements such as; GENESIS ADVENT CMS, the removal of the dock dividing wall in the well dock for the simultaneous operation of two LCACs and a CODAD propulsion system (with five MAN 16V32/40 diesel engines to assure redundancy of the electric plant, multiple failure operation modes, the desire of slightly

LHD Juan Carlos I / Canberra Classes increasing the economical speed and many other considerations) contrary to CODAG (two MAN 16V32/40 diesel engines and a LM2500 gas turbine generator) system used in the Juan Carlos I & Canberra Classes. TCG Anadolu LHD will be able to operate F-35B Lightning II aircraft and necessary measures and modifications, such as heat resistant coatings, fore and stern aircraft elevators (each with a capacity and sufficient size to be able to carry up to the F-35Bs or CH-47F Chinooks) and instrument landing systems (Precise Approach Radar (PAR)) would be implemented from beginning to the flight deck/runway, with a maximum length of around 203 meters, beam of 32 meters and equipped with a ski-jump ramp as well as to the island sections. With the fortified deck and island sections TCG Anadolu shall withstand the heat generated by vertical take-off and landing of the F-35Bs. TCG Anadolu is configured to house up to 12 F-35Bs plus a similar number of medium sized helicopters when acting with an aircraft carrier mission profile or up to 30 aircraft including medium

sized and heavy helicopters as well as V-22 Osprey tilt-rotor aircraft in an amphibious operation role. There will be six spots/touchdown points on the runway for medium sized helicopters (up to four touch-down points are planned for heavy helicopters). TCG Anadolu's airborne capacity will include 6 F-35Bs, 4 T129 ATAK Helicopter, 8 medium sized utility helicopters, 2 S-70B SeaHawk ASW/ASuW Helicopters and 2 UAVs.

With a displacement of 27,436 tons at full load the 231 meters vessel's maximum speed would be over 21 knots and she could reach to 9,000nm with economic cruising speed of 15 knots. With the anticipated entry of TCG Anadolu LHD to the Turkish Naval Forces inventory in 2021 new types of manned and unmanned aircraft in fixed wing and rotary wing configurations will also join the Turkish Naval Forces Aviation fleet including medium sized and heavy utility helicopters, attack helicopters and assault aircraft with short take-off and vertical landing capabilities for the deployment on-board the TCG Anadolu LHD. It will be able to act as a command platform and play a decisive role in the Turkish Navy's peacetime missions, including Disaster Relief, Humanitarian Assistance Operations and Force Projection missions.

ZAHA Program

On March 7, 2017 the Armored Amphibious Assault Vehicle (ZAHA) Project contract was signed between SSM and FNSS. Under the contract FNSS will deliver a total of 27 vehicles, including 23 in personnel carrier, 2 in command and control vehicle and 2 in recovery vehicle configuration. The ZAHAs will be deployed on TCG Anadolu LHD vessel of the Turkish Navy. FNNS will start deliveries in March 2021 [first batch will include three vehicles, one vehicle in each variant] and deliveries will be completed in 2022.

Reis Class Type 214TN Submarines

A total of six Air Independent Propulsion (AIP) submarines will be



constructed at the Gölcük Naval Shipyard (GNSY). Construction of the first three submarines are currently on-going. The construction of the first submarine, TCG PiriReis, started in October 2015, ceremony of the third submarine TCG MuratReis has been officially launched on February 25th, 2018 at Gölcük Naval Shipyard with a first welding ceremony. Reis Class Type 214TN submarines are planned to be commissioned between 2021 and 2026. Type 214TN Reis Class Submarines, to be the first AIP-equipped submarines operated by the Turkish Navy, will replace four Ay Class (Type 209/1200) diesel/electric powered submarines. Featuring ISUS-90/72 combat management system the single hull Reis Class Type 214TN Submarines will have an overall length of 67.6m, an overall beam of 6.3m and hull draught of 6.8m. With a submerged displacement of 2,042 tons (surface displacement is 1855 tons) the Reis Class Submarines will be armed with Mk48 Mod 6AT and DM2A4 heavy weight torpedoes as well as Harpoon Block I/II and IDAS missiles. Indigenously developed Akya heavyweight torpedo and Atmaca guided missiles are also expected to be integrated on the platforms in the coming years.

TF-2000 Air Defense Warfare (ADW) Destroyer

The Turkish Navy has initiated a project called TF-2000 to construct a total of four (+2 optional) destroyers fitted with enhanced anti-air weapon and



sensor systems. The main aim of this project is to acquire fleet area air defence capability. Construction of the first ship of the class, will take place at the Istanbul Naval Shipyard and is planned to be in the service of the Turkish Navy service after 2025. The other three sister ships are planned to be constructed in private shipyards and expected to be delivered in 2028, 2029 and 2030 respectively. All four ships are planned to be in the Turkish Naval Forces service by 2031. The displacement of the TF-2000 Frigate is expected to be between 6,500 to 7,500 tons and its overall length is expected to be 145 to 150 meters. The main sensor of the TF-2000 Destroyers called ÇAFRAD, Multifunctional Phased Array Radar (X-Band) is under development. Aselsan will also supply the long-range air surveillance radar (S-Band with AESA antenna) system. In September 2013 a contract was signed between Aselsan and SSM for the design, development and prototype production of ÇAFRAD

system, which will be capable of identifying numerous air and surface targets over longer distances, allowing the air defense weapons on-board the TF-2000 Destroyers layered air defense architecture to be used to maximum effect. Design, development and manufacture of first ÇAFRAD prototype are almost completed. According to current schedule ÇAFRAD prototype will be integrated on one of the Turkish Navy's Barbaros Class frigates, with RIM-162 ESSM capability, during the first half of 2018 and then live firing test will be performed. In 2018 the test campaign will be completed and then the Series Production phase of the contract will be awarded. TF-2000 Destroyers will also feature indigenously developed network centric warfare capable GENESIS ADVENT CMS.

LST

The Acquisition of the Landing Ship Tank (LST) type amphibious ships is also well on track. The construction and outfitting activities on first vessel TCG Bayraktar (L-402) was completed and it was delivered to the Turkish Navy in April 2017. Outfitting and acceptance tests on the second vessel TCG Sancaktar is currently on-going at ADIK Shipyard in Tuzla, Istanbul. There was a rumour that it will be sold to Saudi Arabia that is why it had not been delivered to the Turkish Navy so far. According to the original schedule TCG Sancaktar (L-403) should have been delivered to the Turkish Navy in October 2017.

With a full load displacement of 7,254 tons and a range of 5,000nm at an economic speed of 15 knots the LST ships are able to achieve



© Turkish Naval Forces

TCG "Bayraktar" (L-402)

a maximum speed of 18 knots. LST design features bow and stern doors, a port-side vehicle access ramp, a flight deck for a 15-ton helicopter, capacity for 1,200 tons of cargo, and accommodation for 350 troops plus 129 ship crew. LST ships have 560 bed capacity. The LST is designed to accommodate 20 Main Battle Tanks, and between 24 and 60 light vehicles dependent upon the amount of MBTs and other equipment/cargo carried. Internal vehicle stowage is approximately 1,100 square meters, with an additional 690 square meters of open deck space forward of the superstructure. Four locally designed and manufactured Landing Craft Vehicle/Personnel (LCVP) are stowed on the open deck and are lowered and raised by two large hydraulic cranes mounted just forward of the superstructure, one port and one starboard. Each LCVP can accommodate either 40 marines or 8 tons worth of vehicles and cargo.

TCG Bayraktar LST has a defensive armament consisting of two Oto Melara 40mm 40L70 Fast Forty deck guns mounted port and starboard on the bow, 2 Mk-15 Phalanx Block 1B Baseline 2 CIWS close-in defense rotary cannons, and 2 remotely operated 12.7mm STAMP Stabilized Machine Gun Systems of Aselsan. The Havelsan GENESIS combat management system (CMS) is fitted [running on 5 operator consoles] and integrated with Thales SMART-S Mk2 3D radar [manufactured and delivered by Aselsan] and Aselsan's ARES-2N ESM System, making it the most capable amphibious vessel in the Turkish Navy's inventory.

During sea trials TCG Bayraktar LST ship was able to reach top speeds of 19 knots. It is the fastest LST of the world. It has the ability to make stern-gate-marriage, which enables the carried amphibious vehicles to transfer quickly and easily to the other landing vehicles.

Logistic Support Ships

Covering the acquisition of two oil tankers from a local shipyard the Logistic Support Ship Project was commenced in order to support



TCG "Akın" (A-584) and TCG "Işın" (A-583)

deployed combatants in the Turkish Navy's operational regions including the Black Sea, the Aegean and the Eastern Mediterranean.

The main mission of these ships is combat support in terms of logistic support and performing command and control support. Logistic Support Ships with their on-board capabilities can also support humanitarian aid and peace support operations. Selah Shipyard was selected in May 2014 and the contract was awarded with an advanced payment by SSM on November 4, 2014. The first ship Yzb Güngör Durmuş was launched on October 8, 2016 and the second ship, Ütgm. Arif Ekmekçi was launched on July 4, 2017. Both ships are scheduled to be delivered in 2018 to the Turkish Naval Forces Command.

MoShip / RatShip

Under the contract awarded by SSM on October 28, 2011 one Submarine Rescue Mother Ship (MoShip) and two Rescue and Towing Ships (RatShip) have been constructed at the Istanbul Shipyard, part of SNR Holding is a private shipyard located in Tuzla, Istanbul. The MoShip is named 'TCG Alemdar (A-601) and the RatShips are named TCG Işın (A-583) and TCG Akın (A-584). TCG Alemdar was launched on April 28, 2014, TCG Işın was launched on June 25, 2014 and TCG Akın was on September 3, 2014 at the Istanbul Shipyard.

TCG Alemdar MoShip joined the fleet in January 2017, TCG Işın RatShip joined the fleet in July 2017 and TCG Akın joined the fleet in December 2017.

The MoShip TCG Alemdar is capable of providing the life-saving support to disabled submarines and evacuating the crew. The RatShips TCG Işın and TCG Akın are capable of towing broken down, wrecked and ran ashore ships as well as fire-fighting. Moreover, both ships, are equipped with modern rescue systems and equipment such as remotely operated underwater vehicle (ROV), atmospheric diving suits (ADS), submarine ventilation system, emergency life support system, pressure chambers etc., and can also perform the underwater repair work and wreckage removal through divers, atmospheric diving suits and ROVs.

The MoShip, designed to perform subsea and surface search and rescue missions up to and including sea state 6, will have the necessary infrastructure for the deployment of both the US Submarine Rescue Diving and Recompression System (SRDRS) and the NATO Submarine Rescue System (NSRS), which are to be used in the transfer of submarine crew to the surface. The MoShip will have the necessary means and capabilities to rescue submarine crew in a maximum of 72 hours. The MoShip is a mono-hull vessel with 90m overall length, 18m beam and 5m draught. With a displacement of around 4,100 tons it will have



enough space for 131 personnel, of which 89 will be ship crew and 32 will be rescue personnel. It has a maximum continuous speed of 18 knots and an endurance of 4,500nm at an economical speed of 14 knots. The RatShips are mono-hull vessels with an overall length of 68m, 14m beams and 4m draughts. With a displacement of around 1,950 tons they will have enough space for 104 personnel.

Fleet Replenishment Ship (DIMDEG)

The DIMDEG Project was launched to meet the Turkish Naval Forces Command's new generation Fleet Replenishment Ship requirement, satisfying the fuel and water transport and supply needs of surface units in the open seas around the world. The project comprises two phases: Contractual Design and Detailed Design & Construction. The ship's design has been carried out by the Turkish Naval Forces Command's Design Project Office (DPO) located at the Istanbul Naval Shipyard, while some activities/tests required for the design phase have been performed by STM under a contract awarded by SSM on October 1, 2012.

The DIMDEG will have an overall length of 195 meters, displacement of 22,000 tons and a beam of 24.4 meters. To be powered by two gas turbines and two diesel engines the DIMDEG Fleet Replenishment Ship will have maximum speed of 24 knots.

For the Detailed Design & Construction phase a tender was

launched and in May 2016 proposals have been received from Sedef Shipyard and Sefine Denizcilik. In 2018 the contract is expected to be signed by one of these two bidders.

Turkish Type FPBs

The Turkish Type Fast Patrol Boat Program was launched to acquire a total of 10 FPBs (4 firm and 6 optional) to replace four Dogan, four Ruzgar and two Yıldız Class FPBs. The aim of the program is to develop highly agile indigenous platforms, able to create surprise effect thanks to their high speed and capability to conduct efficient surface combat through high strike power. Under the program SSM issued a RFI document to local shipyards on July 25, 2013.

After receiving over 10 responses to the RFI document, a feasibility study was initiated, the result of which were already submitted to the Turkish Naval Forces Command, which is still working on the Turkish Type FPB Program's Technical Specifications.

Each is expected to cost around US\$150 Million and the Turkish Type FPBs will have an indigenous design and SSM and the TNFC will own all the intellectual property rights. It will feature high speed (over 45 knots and up to 60 knots), high strike power (8 RGM-84 Harpoon/Atmaca SSMs, 1 x 76mm Super rapid main gun, 1 x 21-cell Mk49 Mod 3 RAM launcher and 2 x 12.7mm STAMP systems) and 'stealth' (with reduced Radar Cross Section [RCS], Infrared [IR] Signature, Magnetic Signature and Acoustic Signature [Underwater Noise Level]). The Turkish Type FPBs are required

to be able to conduct operations at high sea state conditions.

Conclusion

Realization of these platform projects will carry the Turkish Navy forward in the right direction, toward building a modern, interoperable and rapid deployable navy. With these platform projects along with some other developments and programs such as; fixed and rotary wing UAVs, unmanned surface vessels, indigenous weapon systems (including Akya heavyweight torpedo, Atmaca surface to surface & land attack missile and Gezgin cruise missile), national submarine (MilDen plans to replace Preveze Class Type 209/1400 submarines in 2030s), new mine hunting vessels (to be designed and constructed at local shipyards), Long Range Maritime Patrol Aircraft (a requirement for P-8A Poseidon type MPA has been defined) and 2 Landing Craft Air Cushion (LCACs) vehicles for the TCG Anadolu LHD, the Turkish Naval Forces Command (TNFC) aims to build a force structure in order to prepare the Turkish Navy for the challenges of the 21st century.

Once the on-going procurement and modernization programs are completed the Turkish Navy will be robust and a deterrent as it has never been before. The Turkish Naval Forces Command (TNFC) has framed this goal in its new motto 'Dependable in Cooperation, Deterrent in Crises and Decisive in Combat.' ■

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A professional portrait of a middle-aged man with dark hair, wearing a dark blue suit, white shirt, and a patterned tie. He is standing in an office environment with a lamp and a framed picture in the background.

Multiple Competencies in Defense and Technology - Turkey's Seasoned Experts, ONUR A.Ş

Designing Military and Civilian communication systems with low Life Cycle Costs that are highly Maintainable, Sustainable and Available, ONUR A.Ş participates in critical tenders in the international arena. In an exclusive Defence Turkey interview, ONUR A.Ş - General Manager, Mr. Noyan Burçin Dede discusses the company's high-profile projects, dedicated history with the Turkish Armed Forces (TAF) and future infrastructure and plans

Defence Turkey: Dear Mr. Dede, you were assigned as the General Manager of ONUR A.Ş. last November. What will ONUR's vision be in this new era under your guidance? What plans and strategies will be identified for the new period? Where will ONUR position itself in Turkey and in the world market?

ONUR A.Ş. has been performing activities as a well-established family business since 1980. Our company, which has been conducting engineering activities related with construction and infrastructure works since the beginning, has later become familiar with the defense industry as the subcontractor of major companies and with such infrastructure and experience, it seized the opportunity to cooperate as the main contractor for the first time with the Undersecretariat for Defense Industries (SSM) as a main contractor with its unique product in 2012. My goal is also maintain ONUR's institutional culture, working discipline and engineering infrastructure that the company has been containing up to date, and without deviating from the communication system and technologies that are in our focus, maturing our company as an accredited company in the eyes of the industry with its accomplished position in Turkey and the added value it created, while conducting activities in order to position it in the international arena as a company competing with its worldwide rivals in technology and furthermore developing products with superior capabilities.

Defence Turkey: You have been indigenously developing the IP Based Voice Recording/Playback System in addition to the IP Voice Communication System / IP VCS that are considered worldwide as "niche" areas. Your systems are being utilized by the Turkish Armed Forces as well. Could you please inform us on the projects conducted so far with the Turkish Armed Forces and on the current status of these projects?



Our company has been providing services to the Turkish Armed Forces (TAF) ever since its establishment in 1980. Within the context of our integration capabilities developed in parallel with the experiences gained through the projects, we have started providing services to various local and foreign integrators. For instance, as part of Meltem-2 Project, we have been assigned as the subcontractor of Thales Communications France for the execution of the design, integration and installation of the systems they will be establishing in Turkey. In addition to this project, we also accomplished the integration of the Radar and WECDIS systems of the Surface Vessels of the Naval Forces Command. Our company conducted the integration of the WAIS, ECDIS and ECS systems to patrol boats of the Coast Guard Command, besides assumed the design, integration and installation of the electronic systems of the various air traffic control towers at Turkish Air Forces' Bases. All the experiences we accumulated through these projects introduced us to the defense industry and with the know-how and experiences we gathered, we directed our focus towards

creating our own systems and technologies. As an output of this effort, we developed the Voice Communication System (VCS) which is a critical sub system that we used to procure from foreign countries and we signed our first contract as the main contractor with the SSM in 2012. Within the scope of this contract, we accomplished the design and production of the radio gateway providing IP based access to the analog radios within the inventory of the Air Forces, development of the software-based voice switching systems, development of touch screen controller working position equipment, development of voice and data recording systems, Link-16 voice integration and integration of the time distribution systems. At the end of the project, last year we signed its second phase composed of project's extension to all the alternate bases and successfully completed the first Factory Acceptance Tests as part of the second phase. The project is progressing satisfactorily.

Another project we are assigned as the main contractor under the auspices of SSM is the Maritime Tactical Radio Network (DETTA) Project. Within the framework of this project, we will be developing the intelligent

hybrid communication router that controls the wireless devices for the Naval Forces Command and execute the data prioritization and routing in accordance with the identified rules and that provides the establishment and continuation of the tactical wireless network via smart algorithms and the Wireless Communication Module (WCS) that enables the broad band data transfer. This project is also being carried out successfully as a result of the effective and constructive business relations we built both with SSM and the Naval Forces Command.

Mobile and Fixed TACAN Procurement Project is among the projects we have been executing as a main contractor under the guidance of SSM. As part of this project, we will be installing 10 fixed and 4 mobile TACAN systems to the various airports under the auspices of the Air Forces Command. We aim to launch the acceptance of the systems taking part in this project in the second half of March.

In addition to the aforementioned projects we have been conducting as a main contractor at SSM, in line with our existing contracts there are projects for which we have been assigned as the subcontractor of TAI and Aselsan. As part of our contract with TAI, we will be supplying the communication unit of the ground control units of unmanned air vehicles that are being developed by TAI. Within the framework of the principle agreement for the "Air Traffic Radar Systems Development Project" being developed by Aselsan, we signed the contract regarding the Development and Procurement of the Communication and Recording System as the subcontractor as of this January.

Defence Turkey: The final acceptance process of the "IP Voice Communication System and IP Based Voice Recording / Playback System Procurement Project" was completed at the end of January. This project was conducted to provide air to



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ground communication between the air traffic control units and air vehicles and ground - voice communication with the other surrounding units for four different airports of the State Airports Authority (DHMI). What would you like to say on this?

This project has two critical aspects for us. This project executed for DHMI is the very first project offering us to prove ourselves in the civilian area. We seized the opportunity to extend the experiences and know-how we acquired through the military implementations to the civilian area. In the tender initiated for this project, we competed with the worldwide giants and witnessed that the indigenous technology we developed had the competence and depth beyond such major companies. This has been the factor motivating us in opening to global markets. With the help of the encouragement we took there, now we are participating in the critical tenders in the international arena, showing the world a Turkish company is in their league and we are very proud of this.

Defence Turkey: Taking your capabilities and technology in IP VCS into consideration, how do you define your position in the international platforms? What would you like to say about your activities conducted to this end as well as your strategies?

I would like to state that the competence and technology of the product we developed in the IP VCS/VRS area is currently superior

than most of the products of the companies working on this area. Within the context of the HSTA Project which we signed with the SSM in 2012, we designed an IP based product structure in line with the high standards and specifications stipulated by our Air Forces Command. Currently the number of the systems operating as "pure" IP is no more than 2 or 3 in the world, and this makes our product stand out technically. The fact that we installed our product at 35 locations with 560 legacy radio capacity at the inventory of the Air Forces Command also provides us an important advantage in respect of the greatness of the project and our integration capability.

Presently, we strive to introduce our communication solutions for the civilian and military projects in various geographies from Qatar to Ethiopia, from Malaysia to India and endeavor to obtain results by participating in tenders with our business partners.

Defence Turkey: Within the scope of the Air Defense Radio Network Project (HSTA), upon the resolution of the Defense Industry Executive Committee dated 9 March 2016, it was decided to launch the contract negotiations with ONUR as the main contractor for extending the main jet bases and alternate airdromes. The second phase of the Project started in July 2017. In this regard, what would you like to say about the activities conducted concerning the HSTA Project?

Within the scope of HSTA Project Phase-1, the system is being used actively and successfully after the installations at 6 centers and 82 remote sites. As of July 2017, material procurement activities were accomplished for executing the installation of the indigenous VCS and VRS systems which were developed by our company to main air bases and alternate airdromes. The factory acceptance activity of the first group planned for 2018 was completed successfully. We also completed the infrastructure activities in order to conduct the installations at the units simultaneously. In the upcoming period, the systems will be launched to utilization upon the completion of the acceptance processes following the installation of the systems at the units.

As we execute the installation activities at the units, we will

be conducting the factory acceptance and infrastructure activities of the 2nd group units planned for 2018.

Defence Turkey: What is the latest status of the Mobile and Fixed TACAN Procurement Project you have been conducting with the Undersecretariat for Defense Industries?

As part of the "Mobile/ Fixed TACAN System Procurement Project" that we have been conducting with the SSM, we covered notable distance and currently we are at one of the most critical stages of the project.

Following completion of the Fixed TACAN Systems Factory Acceptance Tests and Trainer's Training in 2016 at the United Kingdom, we accomplished the factory acceptance tests of the Mobile TACAN Systems at the USA with the participation of the representatives of the SSM and Air Forces Command and successfully completed the O, I

and D Level trainings in respect of the Fixed and Mobile TACAN Systems.

Currently, we are planning the delivery of the systems in coordination with SSM in order to launch the Site Acceptance Tests. We project that the first months of 2018 will be mostly filled with site acceptance activities. Our target is to complete the Site Acceptance Test of 4 Mobile TACANs in March, complete the acceptances of Fixed TACANs around June 2018 - December 2019, launch them to the service of the Air Forces Command and initiate the warranty period.

Defence Turkey: What is the scope of the activities have you been conducting in respect of your Mobile Air Traffic Control Tower that you indigenously developed and manufactured for the Air Forces Command?

Two Mobile Air Traffic Control Towers existing currently within the inventory of the Air Forces

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Command was a project which we executed the design and engineering activities years ago. It has been a long time over the delivery of the both systems and within that period we developed our VCS/ VRS systems. I can say that with the help of our existing engineering infrastructure and competences, we are capable of manufacturing any Mobile Air Traffic Control Tower with design and production flexibility in line with the demands of the customer, fully through domestic and national resources in respect of both design and communication devices and units, in a short period.

We have been going through an intense negotiation process with both domestic and foreign customers in respect of this

product. I hope that soon we will be able to announce good news on the procurement of the Mobile Air Traffic Control Tower both in our country and in the foreign markets.

Defence Turkey: Could you please inform us on the activities accomplished so far and on the current status of the Maritime Tactical Radio Network (DETTA) Project containing the development, design, procurement and installation of the system to be developed for the Naval Forces Command, which will fulfil the voice, data, image and messaging demands as part of the Network Enabled Capability concept?

DETTA Project is being executed successfully as a result of the effective and constructive business relations we have built

both with the SSM and the Naval Forces Command. We are exerting our best efforts in order to render the product fully operable at the final stage and we are proceeding by consulting the issues with the SSM and Naval Forces Command throughout all phases and processes.

The design activities are being conducted as planned in the Project. Besides, the primary "Proof of Concept" model released as a result of the development activities within the company has been prepared and rendered operable. The model was introduced to the users as part of the 8th Naval Seminar and precious inputs were received. Software and hardware design and development activities are being carried out for integrations taking part within the scope of the Project.

By the end of the Project, the Naval Forces Command will have reached the ultimate point achieved by technology and even beyond regarding the "Network Enabled Capability" which will be envied by many nations. And this crucial capability will be provided as a unique and national solution by the ONUR.

I believe that we will be putting forth an exportable product fulfilling the demands of the Naval Forces Command and containing technologies beyond the products of the global actors.

Defence Turkey: It is clear that as ONUR you have multiple competences as a result of the experiences you gained in both military and civilian areas. What are your views and comments in this issue?

The capability we acquired through defense industry projects opens many doors to our company in the civilian area as well. As part of the Air Defense Wireless Network Project, the number of the systems we installed at numerous sites of the Air Forces Command is higher than the number of the airports run by many countries in Europe. This turns out to be a great reference and a critical indicator of maturity for us in the international market.

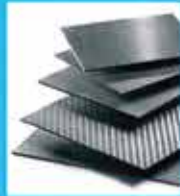


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Additionally, the requirements involving high technology taking part in the HSTA Project's contract of the Air Forces Command and the SSM enable us to position our product beyond many of our rivals in world category.

I hope that the emphasis on indigenous and domestic product concept bearing great importance in the defense industry would not be limited merely to the defense industry, and that it extends to all units and organizations of the government.

Defence Turkey: The importance you attach to R&D as ONUR is very well known. In this respect, which type of an infrastructure did you establish with your new R&D center? What is the status of your R&D studies related with new products and technologies?

R&D Projects bear greater importance to the companies of SME scale like our company. Currently, numerous support and grant programs are offered for the R&D Projects. As such, we closely follow all these programs and exert great efforts over the R&D projects that would expand and deepen our existing capabilities, bringing new capacities to our company.

Within the last year, we moved our engineering department located at Hacettepe University's Teknokent to our premises in Ümitköy and we have been conducting our studies at the accredited R&D center there. Most of our employers are the graduates of engineering departments of the universities and they are experienced and esteemed colleagues. We try to make contribution by investing in them through training and supporting them in post-graduate and PhD programs.

Defence Turkey: Does ONUR offer a solution to military institutions and associations with its performance-based logistics concept? What is your approach regarding this issue?

First of all, during the design phase of the systems provided to the civilian and military institutions and associations,

ultimate attention is being shown to enable the selection and production of the most ideal Sub System in respect of Reliability, Availability and Maintainability (RAM) in addition to Sustainability and Testability. Thus, regarding maintainability, our systems stand out as the systems delivered to the users claim minimum failure rate, as no additional test and measurement devices are required thanks to the Built-in Test (BIT) feature of the sub systems, as they do not need planned and preventive maintenance and as the corrective maintenance activities are merely composed of O-Level LRU change.

However, from the perspective of "the designer knows the system best" approach, ONUR, with its experienced and expert staff, has always adopted the approach of providing continuous support to its products in the field.

We also have been conducting projects within the scope of Performance Based Logistics (PDL) and upon the demand of our customers; we are ready to provide PDL contracts by aligning with the minimum logistical response duration and flexible project models at high activity targets. Moreover, we have been enabling the generation of operational / cost

efficient solutions regarding the assessment and implementation of the half-life modernization requirements as part of the PDL.

As I mentioned in the very beginning of our interview, our main target and principle is to design systems with low Life Cycle Costs that are highly Maintainable, Sustainable and Available.

Defence Turkey: Lastly, would you like to convey any message to the readers of Defence Turkey?

Development and change is an infinite and continuous cycle. As the institutions and individuals capable of keeping pace with change reaches success, the ones lagging behind unfortunately fail to live this dynamism and sustainability. We have always invested in individuals throughout our institutional history of approximately 40 years; we embraced our staff as members of our family and sincerely involved them in all our decision-making processes. I strongly believe that in the upcoming period we will be developing our image as a preferred company to cooperate with in the industry with our participatory culture, institutional structure and human resources policies and implementations and I would like to express my gratitude to all our shareholders elevating us to this level ■



Mr. Cem Akalın - Managing Editor of Defence Turkey Magazine; Mr. Noyan Burçin Dede - General Manager of ONUR A.Ş



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Turkish Defense Industry Assembly's 35th Meeting held in Ankara

The 35th Meeting of the Turkish Defense Industry Assembly was held on 19 December 2017 at TOBB Twin Towers under the presidency of the Chairperson of the Assembly Mr. Yılmaz Küçükseyhan, with the participation of the Undersecretary for Defense Industries Prof. İsmail Demir, representatives of the Ministry and assembly members in order to inform the members on the Undersecretariat for Defense Industries' short, medium and long term projects and assess the expectations of the industry in 2018.

Addressing the assembly members at the opening of the meeting TOBB (Turkish Union of Chambers and Commodity Exchange) Defense Industry Assembly Chairman Mr. Yılmaz Küçükseyhan shared the meeting agenda with the assembly members. In his speech, Mr. Küçükseyhan stated that there were 61 industries under their Industry Assemblies and the Defense Industry Assembly was at the top of the most crucial assemblies and stated that the industry's turnover growth was 22% in 2016 – 2017 adding that it was a constantly developing and progressing industry. Underlining that there was an increase of 33% with governmental incentives in R&D expenses, Mr. Yılmaz Küçükseyhan highlighted the industry's great improvement from 2004 – 2005 until today.

Mr. Yılmaz Küçükseyhan made a detailed presentation to the members of the Assembly regarding the Assembly's activities, views shared, meetings attended as the Presidency Council of the Assembly and the visits paid within 2017.

Expressing his gratitude to the Undersecretary for Defense Prof. İsmail Demir and Deputy Undersecretary for Defense Industries Dr. Celal Sami Tüfekçi for their continuous support to TOBB's Defense Industry Assembly and for their participation in the meeting, Mr. Küçükseyhan left the floor to the Undersecretary for Defense Prof. İsmail Demir for his remarks.



Turkish Defense Industry's Performance Assessment of 2017, Thoughts on Projects and Expectations from the Industrialists

In his assessment on the Turkish Defense Industry and expectations from the industrialists, Undersecretary for Defense Prof. İsmail Demir underlined that the industry needs to accomplish more than expected in order to achieve a "Powerful Turkey" and added that the Defense industry has to unconditionally implement President Mr. Recep Tayyip Erdoğan's instructions for mobilization.

Stating that there were 300 projects conducted by the Undersecretariat for Defense Industries during his assignment in 2014, Prof. Demir stated that this figure currently has reached 600 projects. Prof. Demir also mentioned that merely 50 of these projects were launched in 2017 and added that in addition to the 22 decrees made by the Defense Industry Executive Committee, 40 projects are being held under the signature stage.

Stressing that critical deliveries were made for the Armored Personnel Carriers and Armored Combat Vehicles, Prof. İsmail Demir stated that they covered crucial ground in the development and production of the critical ammunition such as smart munitions, winged guided kits, precision guided kits, laser guided kits, penetrating bombs, etc. and that they launched the delivery of such products. Prof. Demir pointed out that in order to fulfil the engine and

transmission requirements through national resources, they initiated development projects in related areas and added that the delivery of the Modern Infantry Rifle was at full steam.

Noting that numerous R&D projects have been launched under the auspices of the Undersecretariat, Prof. Demir stated that in addition to the currently popular S-400 Air Defense Systems' procurement, the activities for the National Air Defense Missile System were launched and that the related shareholders are working on this issue. Prof. Demir added that test and development activities for the indigenous and national systems such as Hisar-A, Hisar-O and Hisar-U continue with the national resources as well.

Prof. Demir: "43 UAV Systems consisted of 38 Tactical Class UAVs and 5 MALE Class UAVs performing services for the Turkish Armed Forces"



Prof. İsmail Demir - Undersecretary for Defense Industries



hidden hero in tyre

When the vehicle is traveling, the explosion of the tire caused by various reasons can not fulfill the crushing wheel function of the vehicle's weight and the rim comes into contact with the tire. With the effect of the friction on the wheel rim and the effect of the rutting which occurs after the wheel rim rotation, the rubber heats up, crumbles and the vehicle is completely out of control. The vehicle that has lost control can open doors to possible disasters. In order to prevent this danger, it is very important that the control of the car is not lost and can go to the target when the tire bursts. The system that allows a certain distance to go without losing control is called run flat.



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Prof. Demir expressed that so far, over 1,100 Mine Resistant Ambush Protected "Kirpi" vehicles, over 300 Armored Personnel Carrier "Kobra" Vehicles, over 230 "Ejder Yalçın" Armored Combat Vehicles have been delivered to the Turkish Armed Forces Command. He stated that they collected the proposals from the relevant companies in respect to the Altay Main Battle Tank's mass production, adding that mass production would be launched upon evaluations. Moreover Prof. İsmail Demir noted that the 26th T129 "Atak" helicopter was delivered to the Land Forces Command and the preparations for the delivery of the 27th helicopter continue.

Noting that 43 Unmanned Air Vehicles composed of 38 Tactical Class and 5 MALE Class Vehicles were launched into operation by the Turkish Armed Forces and that nearly 10 of these systems were of armed configuration, Undersecretary Prof. İsmail Demir added that they conduct various studies toward fulfilling human resources needs of the industry and that they will be adding new ones in the upcoming future.

Prof. Demir stated that the Undersecretariat for Defense Industries continues its offset applications and that they set rules stipulating the main contractor to assign Sub Industry, SMEs, technology companies and universities and continued: "Throughout 2017, you witnessed the Industrial Competence Assessment and Support Program (EYDEP) emerging in various environments and soon we will be launching this Project. We continue our activities in order to extend the Defense industry in Turkey and enrich the competence of technology and human resources."

Underlining that one of the most important phases of the investments made in human resources was the realization of technologies with surprising effects and creating an environment suitable for this, Prof. Demir said that taking part in the Defense industry should be done with a spirit of mobilization, emphasizing everybody's and mostly our industrialists' need to feel this spirit.

Prof. Demir also stated that they will be organizing new contests similar to that of the Unmanned and Autonomous Land Vehicles



© Turkish Land Forces

Design Competition and added that they expect the support and contribution of the industrialist to such projects. Prof. Demir: "We held the "Roboik" Unmanned and Autonomous Systems Land Vehicles Competition this year and recently organized an award ceremony for the winning projects. This has been a first step and the number of such competitions will increase. We aim to create awareness and to realize the dreams of our companies, our youth and our citizens. We wish to build various mechanisms to encourage such activities and we expect both your support and participation."

Prof. İsmail Demir: "Being an industrialist is in a sense equal to being a hero. Where there are a series of areas to easily make money, investing the capital in the Defense industry and expecting great revenues requires courage and dedication."

The assembly meeting continued with the Q&A session between participants and Undersecretary Prof. Dr. İsmail Demir.

Medium and Long Term Projects, Industrialization Activities and Plans for Sector Management

Following the networking break, the Head of the Department of Industrialization at the Undersecretariat for Defense Industries Mr. Bilal Aktaş shared a presentation that informed the Assembly members in detail on medium and long-term projects, industrialization activities, plans for sector management, R&D and technology activities.

Head of the Industrialization Department Mr. Bilal Aktaş mentioned that they categorize the subjects for which they are responsible and

T129 Atak Helicopters elaborated that the workload to be essentially accomplished by the Undersecretariat falls under A category, the B category contains exporting of Defense and aerospace products, and category C is composed of technological capability acquisition and investments.

Aktaş: "As of the end of 2016 the amount of domestic and foreign accumulated industry participation offset reached \$23.1 billion. \$12.8 billion of this liability was realized. There is \$10.3 billion in industry participation offset to be realized within the next decades. As we analyze the breakdown of the offset industry participation agreement, we witness that \$3 billion of the \$10 billion of local companies' total liability was accomplished. Yet, there is still a \$7 billion domestic participation liability to be accomplished. This shows us the potential in the upcoming period regarding the aspect of business shareholders in the industry."

Mr. Bilal Aktaş added that technological sub system ownership is the primary objective for achieving a sustainable Defense industry and that they focus on the domestic development model in order to develop this. Mr. Aktaş underlined the vital importance of acquiring sub systems in the industry that do not exist in Turkey, the utilization of the capabilities acquired in future projects and maintaining the participation of domestic companies in the industry by be involving in new projects.

Mr. Bilal Aktaş stated that the continuity of the industry participation offset applications in the next five years would be maintained, the activities regarding the support credits for qualified products and infrastructural support would continue and that they are thinking of increasing the credit volume related to these activities. Moreover, Mr. Aktaş

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stated that without making regional distinctions in the investments to be made by the industry (in case the investment is made in the Defense industry area), it would be possible to benefit from fifth degree regional incentive implementations all around the country.

Expressing their expectations from the industry as the Undersecretariat, Industrialization Department Head Mr. Bilal Aktaş underlined that exports were amongst the *sin-qua-non* subjects. He added that the products manufactured must have sufficient quality, certification and be available for international competition. Also noting that the support and incentive mechanisms granted by the government should be used efficiently, Mr. Aktaş said that in order to maintain this, they established the Industrial Strategy and Investment Planning Department within the Undersecretariat. He underlined the importance of the participation of all companies in the sector in the clusters. Furthermore, Mr. Aktaş stated that companies should own institutional integrated software systems and have in-depth knowledge of how to fulfil the requirements stipulated by the signed contracts. Mr. Aktaş advised all companies to become members of the portal and touched upon the importance of keeping updated data within the portal and the requirement of entering the post-graduate and PhD degrees and areas of the staff employed at a given company.

Mr. Bilal Aktaş: "Our supervisors will begin assessing companies following the launch of the EYDEP in 2018"

Relaying information to the Assembly members on the activities held as part of the EYDEP program Mr. Aktaş said, "Supervision of the companies will be maintained within the scope of the EYDEP program. EYDEP training was completed as of last week and I would like to thank the executives of all companies for their participation. The training spanned 6.5 months. All of our colleagues attended 17 different training sessions and 110 evaluators assessed the training and a total of 60 classes were opened. With the companies trained here, we will conduct a joint



Mr. Bilal Aktaş - Head of Industrialization Department of SSM

study with the company Boeing on how Boeing supervises companies. They will receive training from Boeing. We will be executing a similar study with Airbus as well. As of 2018, our supervisors will be starting their assessments at the sites, following the launch of the program. With the help of these assessments, the companies will have the chance to observe their status. In 2018 and 2019 we will be analyzing the status of the industry as part of the EYDEP program. As a result of these assessments, we will be evaluating the ways of elevating companies with lower degrees to higher levels, and which support mechanisms to launch. Hereby, I kindly ask our companies to be transparent and sincere during these assessments and reply to the questions within this framework, if our companies emphasize their strengths to get higher scores and speak less of their weaknesses then they may be deprived from the support they may be eligible to receive."

Underlining that the development agencies will be among the greatest shareholders in this project, Mr. Aktaş said, "The development agencies located in certain cities will conduct programs with the EYDEP supervisors, and this study will allow the existing capabilities in those cities to reach us. A resource of 40 million TL was allocated for this program. The support to be given in certain areas required by companies such as institutionalization, quality, etc. will be funded by this resource as well. The list of the parts was received toward achieving the indigenization of our Land, Naval and Air Forces. The products that could be indigenized

as part of this resource will be shared with companies passing EYDEP supervision. We assess that the second section of this pyramid could be completed in this way. As I mentioned previously, the clusters are actively continuing their activities, besides a cyber security cluster was included. This cluster which is to be established under the leadership of our Undersecretariat, will be gathering companies active in cyber security under a single roof."

Mentioning the R&D road map, Mr. Bilal Aktaş expressed that their primary target at this point is to extend to the basis of the technology and informed the audience that priority programs such as autonomous and control technologies, advanced material, innovative platform systems and concepts, energy and impact systems, sensors, signal image processing, KBRN, electronic warfare, destruction technologies, communication technologies, informatics and cyber security projects are taking part in the R&D road map.

Mr. Aktaş stated that the R&D projects conducted by the Ministry of National Defense were handed over to the Undersecretariat for Defense Industries as of 2016 and added that 32 new projects were approved during the SSM's panel on R&D held in the previous period. Mr. Aktaş also expressed that the Undersecretariat allocated a budget of 300 million TL to R&D and that this resource was used for funding R&D projects.

Mr. Bilal Aktaş concluded his words by underlining the impossibility of speaking of an independent country without achieving superiority in technology and stated that he believed this superiority should be achieved through an extended supply chain.

Addressing the participants with the closing statement, Deputy Undersecretary Dr. Celal Sami Tüfekçi expressed that 2017 has been a busy year for the industry adding that they expected 2018 to be even more efficient and concluded, "The share allocated to the industry support fund from income taxes has increased and we will be maintaining an increase in revenues by 120%, our project portfolio conducted within the auspices of the Undersecretariat has grown incredibly" ■

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ASELBUOY: Turkey's National Sonobuoy

Since beginning to work on underwater acoustic systems in 2006, Aselsan has made significant investments in this area, developing various national systems such as the HIZIR Torpedo Countermeasure System for Surface Ships, the ZARGANA Submarine Torpedo Countermeasure System, the ZOKA Decoy Family, the KULAÇ Echosounder System, and the ASİST Intercept Sonar System. As one of the latest steps in its underwater acoustics road map, Aselsan kicked off a self-financed development project and started working on developing the first national sonobuoy in late 2015.

Used for various purposes like anti-submarine warfare, search and rescue and underwater acoustic research, sonobuoys are expendable sonar systems that can be dropped or launched from aircrafts and surface ships alike. Initially developed during World War II in order to detect submarine threats from the air, sonobuoys effectively combine radio communication and underwater acoustic domains, emerging as cost-effective underwater target detection systems for aircrafts.

Sonobuoys comprise of a payload, i.e. a passive/active



Sonobuoy Dropped from an Aircraft
(Representation)

acoustic sensor or a special purpose sensor, a cable, suspension and damping structures, a power unit and a receiver/transmitter integrated into an inflatable surface float. Present-day sonobuoys are generally classified into three categories: passive, active and special purpose sonobuoys.

Passive sonobuoys are expendable passive sonars. Once deployed underwater, a passive sonobuoy listens to the environment and relays the acoustic data gathered over a radio link to the launching platform, usually an aircraft. Passive sonobuoys can listen to many different types of noise including submarine or surface ship propeller (cavitation) noise and emergency pinger tones.

Active sonobuoys are expendable active sonars that can transmit acoustic signals at various frequencies and pulse shapes and listen to the echoes of said acoustic transmissions. Active sonobuoys can be used as active sonars for detection on their own, as well as the source in a bi-static or multi-static sonar operation with other passive sonar systems. In bi-static and multi-static sonar operations, sonar pulses are transmitted from an active source, while passive sensors and/or arrays situated elsewhere listen to the echoes of these pulses. The sensors used for listening can either be passive sonobuoys or more complex

structures, such as towed passive sonar arrays.

Special purpose sonobuoys are specialized devices used for collecting scientific data, such as temperature and salinity changes with respect to depth, or for performing search and rescue missions.

ASELBUOY is a NATO A-size, passive directional sonobuoy of DIFAR type, the most widely used sonobuoy type in the world. Developed by Aselsan to be dropped/ejected from aircrafts and surface ships alike, ASELBUOY uses its DIFAR (Directional Frequency And Recording) sensor to listen to the underwater environment and sends the information gathered in real-time to the aircraft or surface ship via a VHF radio



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User Interface

communication link. Operating time, operating depth and VHF communication channel can be programmed from the user interface on ASELBUOY prior to launch. Operating time and VHF communication channel can also be changed after deployment with remote commands over a radio downlink. At the end of its operating time, ASELBUOY terminates its radio transmission and scuttles.

General Features

- › NATO A-size
- › DIFAR sensor
- › Programmable by local user interface and remote command receiving interface



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ASELBUOY



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ASELBUOY can be used for detection purposes in anti-submarine warfare, especially by aircrafts. When deployed in water in large numbers, ASELBUOY can also be used for localization by triangulation.

Designed and verified by Aselsan, the DIFAR sensor acts as a two-dimensional vector sensor to provide acoustic information in the 5-2400Hz frequency band and bearing, enabling localization with multi-sensor processing. The DIFAR sensor consists of two orthogonal mechanical accelerometers and an omni-directional hydrophone. The accelerometers and integrated magnetic compass provide bearing information with respect to the magnetic North, thus granting ASELBUOY localization capabilities besides detection.

All components of ASELBUOY, including the acoustic DIFAR sensor and underwater cable, have been designed by Aselsan. During the design process, Aselsan has particularly focused on enabling the domestic



An Image from ASELBUOY's Wind Tunnel Tests

production of each sub-component of ASELBUOY.

During design verification, Aselsan has performed numerous lab, wind tunnel, acoustic tank, pond, and sea tests that have



ASELBUOY's DIFAR Sensor

provided valuable feedback and helped ASELBUOY to mature into a product to be deployed from surface platforms. Once activated in water, ASELBUOY inflates its float and deploys with its DIFAR sensor at the desired depth using its cable and suspension structures. After deployment, acoustic and bearing data gathered by the DIFAR sensor is frequency modulated and relayed to the launching platform over one of the desired standard sonobuoy VHF channels. A sonobuoy receiver stationed on the surface platform can then pick up the data transmitted by ASELBUOY for processing.

In the near future, Aselsan plans to move onto system verification phase after completing field tests, where ASELBUOYs will be dropped from aircrafts.

Following system verification, Aselsan aims to finish its self-financed Passive Sonobuoy Development Project by having rendered ASELBUOY ready for mass production.

With the passive ASELBUOY, Aselsan is nearing completion of its efforts to provide Turkey with the first member of its national sonobuoy product family. Preliminary design work has also been initiated for the development of an active sonobuoy as well as an integrated sonobuoy receiver and signal processor to be used in sonobuoy-launching air or surface platforms. Along with the receiver and signal processor unit, passive and active sonobuoys will enable bi-static and multi-static sonar operations with Aselsan's HIZIR system.



Image from ASELBUOY's Pond Tests



Images from ASELBUOY's Sea Tests



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Prof. Hasan Mandal Assigned as TÜBİTAK's President

Prof. Hasan Mandal was assigned as TÜBİTAK's President as per the decree promulgated via the Official Gazette dated 22 February 2018 published under number 30340. TÜBİTAK's new President took over the duty from the former President Prof. A. Arif Ergin at a ceremony held at TÜBİTAK's Science Council, with the participation of the Minister of Science, Industry and Technology Dr. Faruk Özlü.

Minister of Science, Industry and Technology Dr. Faruk Özlü stated that restructuring the Scientific and Technological Research Council of Turkey (TÜBİTAK) in accordance with the changing circumstances, demands and requirements was in their agenda and continued: "We will adopt a structure that conducts research and development, focuses on research and development, executes projects, and one that is flexible and a solution partner. We will be mobilizing all of TÜBİTAK's know-how towards achieving 'technology breakthroughs' elevating us toward our targets for 2023. Our vision will be domestic throughout this process, yet our goals will be global." Minister Dr. Özlü thanked Prof. Arif Ergin, who has been executing the institutions' presidency since June 2015, for his hard work. Stating that despite his young age, Prof. Ergin has successfully managed a versatile institution such as TÜBİTAK and made crucial contributions to the Turkish scientific community, Minister Dr. Özlü continued: "With his scientific and humanistic merits, he mobilized his expertise on behalf of TÜBİTAK having served the Turkish scientific community and the Turkish academic community for many years with dedication and has made his mark on lasting projects." Minister Dr. Özlü pointed out that Prof. Mandal, who taking over the position, is also one of the significant and distinguished members of the Turkish scientific community as is Prof. Ergin. He expressed that he believes that Prof. Mandal will be successful in his new assignment as he is esteemed with his academic achievements, the executive positions he has assumed



in universities and his successful activities at the Council of Higher Education.

Minister of Science, Industry and Technology Dr. Özlü: "TÜBİTAK is the apple of our eye"

Underlining that TÜBİTAK is the flagship of science and technology, Minister Dr. Özlü added, "TÜBİTAK is the apple of our eye. This institution has always been at the service of our nation and government with the projects it has launched in every area and with the national and domestic support it provided to Turkish science, industry and technology. Strengthening Turkey, fully availing its facilities to scientists and researchers, being the source of hope with scholarships and incentives it has granted to our youth, TÜBİTAK will proceed on its path in line with the same mission." Minister Dr. Özlü stated that the restructuring of TÜBİTAK in accordance with the changing circumstances, demands and requirements was on their agenda and added: "We will restructure TÜBİTAK with less bureaucracy and more science. We

dream of a Turkey that generates science and technology. We will adopt a new structure that runs research and development, focuses on research and development, that conducts projects and TÜBİTAK will become a flexible solution partner. We will be running our activities through a perspective that embraces science and technology policies and industrial policies on the same platform and that forms a strategic target alliance between them. We will be mobilizing all the know-how of TÜBİTAK towards the 'technology breakthrough' that will take us toward our targets for the year 2023. During this process, our vision will be domestic where our targets remain global."

Noting that the tasks assigned in politics and bureaucracy are in a sense deposited by the nation, Minister Dr. Faruk Özlü underlined that the change of positions also means that the continuity of the relay race ran to provide services. Minister Dr. Özlü told that Prof. Ergin, who has worked hard throughout his assignment and cared deeply for the problems facing the science world, has completed this relay race successfully and added that now it is Prof. Mandal's turn to elevate TÜBİTAK and to make his personal mark in the new successes achieved in the areas of science and technology. Minister Özlü mentioned that they will benefit from Prof. Ergin's experiences at the Ministry and wished this reassignment to bring good luck to TÜBİTAK and the scientific world.



TÜBİTAK President Prof. Hasan Mandal: "We will be working for our country's priorities and needs"

TÜBİTAK President Prof. Hasan Mandal stated that he won a scholarship from TÜBİTAK in 1989 and that he assumed several positions within the institution and was deemed worthy of support and science awards. Underlining that the demand for information has increased significantly in the global competition environment while the methods for accessing information have differentiated, Prof. Mandal said, "Within the context of global competition, developing our indigenous and national technology based on information and science places further importance on the necessity to achieve our short, medium and long term goals that have been identified and reaching our country's targets set for year 2023 and the 11th Development Plan, particularly taking the present circumstances surrounding us into consideration. This may be achieved by developing qualified know-how and qualified human resources on all levels." Prof. Dr. Mandal emphasized the fact that TÜBİTAK's requirements at all levels regarding processes and support within the scope of its mission will be increasing and said, "TÜBİTAK will be revising its processes in this regard and fulfil these demands by renewing them if required. Within the framework of our country's priorities and demands, we will be exerting all our energy to enable TÜBİTAK to reach out to numerous scientists, researchers, industrialists, entrepreneurs, students and relevant all individuals as well as institutions and allowing the institution to make effective and efficient contributions which will assist our country in reaching its targets."

TÜBİTAK's Former President Prof. A. Arif Ergin: "The Project Volume of TÜBİTAK Institutes is 8.3 Billion Turkish Liras"

Former President of TÜBİTAK Prof. A. Arif Ergin stated that ever since his assignment, Turkey has been going through a rough and quite different period with



developments, primarily events such as the July 15th. Prof. Ergin stated that TÜBİTAK had 4 thousand 900 staff when he was assigned and now he is handing over an institution with 5 thousand and 26 employees and continued, "Following the July 15th Coup Attempt, and even before this incident we changed nearly 23 percent of the institution. One of the focal points of FETÖ was TÜBİTAK and as we completed these changes we paid utmost attention to keep our activities running at the same pace." Pointing out the importance of the utilization of unique and national ammunition in the operations in Southeast Anatolia, Prof. Ergin, added, "In the period prior to the July 15th Coup Attempt, we were having difficulties in acquiring ammunition developed by TÜBİTAK Defence Industry Research and

Development Institute (SAGE) in the inventory and its industrialization processes. As of today, over 2 thousand ammunition such as the precision guided kit, wing guided kit and penetrating bomb have been delivered to the Turkish Armed Forces through the information we accessed from available resources. Therefore the change has fulfilled its task of guidance that clears the way for TÜBİTAK and Turkey, while working also for the country's independence." Prof. Ergin stated that they distributed nearly 1.5-2 billion Turkish Liras allocated for science, technology and R&D institutions, on behalf of the government in order to reinforce Turkey's R&D infrastructure and noted that the project volume of TÜBİTAK institutes reached 8.3 billion TL from 4.6 billion TL when he was assigned.



Eurasia Air Show 2018 – Expected to Rival the Dubai Air Show in the Near Future

The Eurasia Airshow, which will take place for the first time on 25-29 April 2018 in Antalya under the auspices of the Presidency of the Republic of Turkey is preparing to gather numerous aerospace giants from Turkey and the world at its event and static area of 300 thousand m²

The Eurasia Air Show is quickly approaching. It will be accomplished under the auspices of the Presidency and intensive preparations have been well underway; not just for many months, but years in the making. Following a busy preparation and planning stage for the event which will host international companies and delegations with platforms to be displayed at the static area, solo and acrobatic flight shows and many other activities, the final touches are presently being made for the Eurasia Air Show. Eurasia Air Show's CEO Mr. Ferhat Yenibertiz and the organizer of the event Medya City's CEO Mr. Hakan Kurt shared the details of the organization with the journalist at a press meeting.

Eurasia Air Show's CEO Mr. Ferhat Yenibertiz: "We are striving to bring the world's greatest air platform AN-225 to Antalya"

Eurasia Air Show's CEO Mr. Ferhat Yenibertiz stated that they accomplished almost 600 negotiations and visited 11 countries within the preparatory stage which lasted for nearly two years and commented on their activities considering the event: "In order to host an international event which is praiseworthy for our country, we allocated an area of 300 thousand square meters in Antalya. Our static area will be 170 thousand square meters. A total of 48 chalets will remain at this static area and approximately 50 civilians, commercial and military air platforms will be displayed at the static area. We are in close cooperation and coordination with the Embassy of Ukraine to bring the world's greatest aircraft AN-225 to the Eurasia Air Show. In order to display the AN-225 at the static area, and our activities to this end are still proceeding. We will be displaying the Airbus 380A



from Qatar at the static area. We are currently under the signing stage of the agreements with worldwide aviation giants Boeing and Airbus and soon we will complete the signing the process. Russia will be one of the countries that will have broad participation in the event. The Russian company Sukhoi will be displaying its aircrafts at the static area. Similarly, Leonardo will be bringing its C27-J aircraft. Leonardo will also demonstrate its AW101 helicopter at the static area and make a demonstration flight as well. Moreover, both our rotating winged platforms and fixed winged platforms which are in the inventory of the Turkish Armed Forces will take part at the static area and in the flight shows."

Stating that Turkey will also host the Asian Civil Aviation conference, Mr. Yenibertiz underlined that the General Directorate of Civil Aviation arranged the Eurasia Air Show in Antalya a day before this event. Mr. Yenibertiz added: "Civil aviation authorities of 192 countries have been invited to the event and 50 of them replied to the General Directorate of Civil Aviation so far."

Mentioning the Undersecretariat

for Defense Industries' great support of the event in respect to the participation of military delegations, Mr. Yenibertiz noted that the Undersecretariat has sent official invitations to nearly 40 countries and underlined that these official invitations have also been sent to private companies by governmental authorities for the first time. Stating that the Ministry of Foreign Affairs' negotiations were proceeding for the participation of the heads of State that Turkey has good diplomatic relations with, Mr. Yenibertiz added that similarly the contacts were being run by the Ministry of National Defense, the Turkish General Staff and the Naval Forces Command.

Medya City CEO Mr. Hakan Kurt shared that Turkey gained an export revenue at the level of \$150 – \$160 billion in 2017 yet imported \$ 200 billion. Mr. Hakan Kurt added that their aim through this organization is to gain for the country added value and continued: "When we launched the studies of this organization, we started our journey by asking ourselves how can we contribute to our country and explore the ways of gaining added value. We launched our activities in 2011 with

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an indigenization exhibition of the Turkish Armed Forces and then the Turkish Aerospace Industry Exhibition and Forum. In 2014, we accomplished the first Hightech Port Defense Industry Fair in Istanbul. We conducted the same event in Qatar in 2015 and in Istanbul in 2016. We will hold this organization again in Istanbul in 2018. Furthermore, we also accomplished an organization namely the Global Satellite Show regarding satellites. This year we will be running the fourth occurrence of this event. While we were preparing for the aforementioned events, we realized that we did not have an aerospace event representing our country in the full sense and with the support of the authorized institutions in 2016 we launched the Eurasia Air Show at the Farnborough Air Show 2016."

Stating that the event will create a critical position for the integration of the Turkish Aerospace Industry with regional and worldwide markets in military and civil aviation areas, Mr. Kurt underlined that they have been working to this end over a period of two years. Mr. Kurt stated that they adopted the Dubai Airshow as a reference model for measuring their success and said, "Our target is to get ahead of the Dubai Airshow's figures when we hold this event for the third time in Antalya. The Dubai Airshow recently hosted 66 thousand visitors, displayed 167 air platforms, hosted 1,200 media representatives and had 1,100 attendees. In order to claim our success, we have to surpass Dubai Airshow's figures."

Stating that the participation of foreign countries in the event is of critical importance for the event, Mr. Kurt added that countries such as Russia, Iran, the United Kingdom, Qatar and Pakistan will be attending the event. He noted that negotiations between Azerbaijan and France continue and new countries may be added to this list.

Mentioning that they expect to see over 100 flags at the event in respect to delegations, Mr. Kurt stated that for the success of the event the rate of international participation should be around 35% – 40% and they believe that they will achieve this figure.

Expressing that the main philosophy and aim of the Eurasia Air Show is to integrate the Turkish Aerospace Industry with regional and worldwide markets in both



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military and civil aviation areas, Mr. Kurt added that they planned to put forth an Air Show that competes with the whole world by bringing together Eurasian communities of the region and the decision makers. Mr. Kurt concluded that they aim to get ahead of the Dubai Airshow regarding the number of demonstrated platforms, visitors, attendance of companies and media, etc. and this is anticipated to occur when they organize the third event of this organization.

Eurasia Air Show's CEO Mr. Ferhat Yenibertiz: "Iran, for the first time, will be attending an International event at the pavilion level"

The Question and Answer session started following the remarks. Upon the question regarding which international defense and aerospace companies will be attending the event, Mr. Ferhat Yenibertiz stated that they will be hosting nearly 35 worldwide major brands and continued: "We are about to sign agreements with Boeing and Airbus. Major companies such as Thales of France, Leonardo from Italy, Honeywell from America, BAE Systems, GE Aviation, Dassault Systems, Rosoboronexport, Russian Helicopter, Antonov, Roll-Royce from United Kingdom will be attending the event. Moreover, Iran will for the first time, participate in an international event at the pavilion level."

Mr. Ferhat Yenibertiz: "We are pushing our limits to bring critical platforms such as the Mig-29 and Su-35"

Upon the question regarding which platforms would be demonstrating flights, Mr. Yenibertiz shared that they have been conducting preparations with a flight

management team yet there might be some last-minute changes, as is common in such airshows and added, "We are pushing our limits to bring platforms such as Mig-29 and Su-35. Our negotiations continue for the flight demonstration of the F-35 JSF jet within the inventory of the Italian Air Forces through a brief passage in the event. To this end, our governmental authorities officially invited Italy. Nearly 100 demonstrations in which Turkey's and the world's leading acrobat teams and pilots will display their performances are being planned."

For the Eurasia Airshow, overall participation of a total figure of 100 thousand participants composed of over 500 companies, over one hundred military, civilian and commercial aircrafts, over 150 military delegations from over one hundred countries and 20 thousand international professional visitors is planned. Moreover, with the coordination of the Ministry of National Education, school tours are being planned to spark the interest of Turkish youth in aerospace, enabling them to closely examine the unique platforms.

On April 27th, on the third day of Eurasia Air Show, the "THY Airlines CEO Summit" will take place, which will gather decision makers of commercial airlines. Turkish Airlines has sent invitations to CEOs of 31 Airlines so far and it has been announced that the names of the CEOs who will be participating in the summit are materializing and becoming clear. A conference on "Women in Air" also will take part at the organization for the first time as well. A platform composed of women with roles in aviation and space from all around the world is aimed to be organized through this conference that will last throughout the day.

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TCG A-584 “Akın” Delivered to the Turkish Naval Forces Command

The second ship of the RATSHIP program, TCGA-584 “Akın” the contract of which was signed in 2011 between the Undersecretariat for Defense Industries and Istanbul Shipyard in order to cater to the Turkish Naval Forces’ Rescue and Towing Ship requirements, was delivered to Naval Forces Command on 29 December 2017. The first ship of the project, TCGE-583 “Işın”, was included in the inventory of the Turkish Naval Forces Command and commissioned in July 2017.

Vice-Admiral Adnan Özbâl - Commander of Naval Forces, Mr. Serdar Demirel - Deputy Undersecretary for Defense Industries and many guests attended the ceremony which was held at the Istanbul Shipyard’s facilities in Tuzla.

Making a speech at the delivery ceremony, Vice-Admiral Özbâl, Commander of Naval Forces said: “The greatest multiplier of the Naval Forces Command in its duty of protecting the rights and interests



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been met. The ships equipped with systems for detecting, identifying and recovering wreckage of sunken ships, submarines, aircraft and similar debris at sea will be able to perform debris recovery missions up to 3000 meters deep with modern rescue systems deployed on them.

According to the statement made by the Undersecretariat for Defense Industries, the capabilities of RATSHIP vessels were listed as follows: Rescue/towing of wounded/grounded/defective vessels, offshore towing, underwater activities such as underwater repair and debris removal to be made through ROV (Remotely Operated Underwater Vehicle) and ADS (Atmospheric Diving Suit) repairing, operating as a target ship in torpedo firings, taking torpedoes from the sea, providing life support to personnel

at maximum depth of 600 meters in the event that submarines cannot reach the surface and supporting personnel rescue activities, intervention to ship fires, rescue personnel, material removal and debris removal from all air platforms which have crash-landed in the sea comprising civil and military air platforms.

The TCG (A-584) “Akın” will replace the TCG “Akın” (A-585) vessel, which was removed from service with the ceremony held on November 16 by the Istanbul Shipyard Command following 47 years of service in the Turkish Naval Forces.

The TCG (A-585) “Akın” was commissioned by the US Naval Forces on May 29, 1943, in the name of the USS GREENLET, and handed over to the Naval Forces on June 12, 1970 at the Port of Pearl Harbor \ Hawaii, USA.



© Turkish Naval Forces

of the country is our national ships and systems developed in line with national strategies. Each of our ships, like TCG “Akın”, which was built by Turkish engineers and workers and which has entered in our inventory, will bring us closer to the target underlined by the great leader Gazi Mustafa Kemal Atatürk, which is the target of being a navy that is growing from the country’s industry.

With the initiation of the service of the TCG A-583 “Işın” and the TCG A-584 “Akın” Rescue and Towing Ships, which were provided under the program, significant requirements of the Turkish Naval Forces Command in this scope have



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TAI Delivers the First Anka-S UAV Systems to TuRAF

The acceptance tests of the first Anka-S UAV system were successfully completed and 2 UAVs and ground systems were delivered to the Turkish Air Forces Command. The Anka-S UAV system was developed by TAI and is capable of autonomous flight in day and night conditions, controlled with Beyond Line Of Sight (BLOS) capability through Satellite links.

Designed according to international safety standards with the integration of new generation payloads and through national facilities, the Anka-S system takes its place in the inventory as one of the most competent systems of its class in terms of safety and operational capability with its national flight control computer, national air vehicle control computer and the national IFF.



Anka-S Stands out with its Enhanced Capabilities

The first SATCOM-capable Anka-S systems will contribute significant power to the Turkish Air Forces Command (TurAF) from a strategic aspect. In order to support TurAF operational concepts, the ANKA-S system added new features to existing ANKA platforms. One of the most crucial additions is the Beyond Line Of Sight (BLOS) capability through Satellite links. Although the ANKA Block-B System can also reach beyond 200 km through Link Relay capabilities, the ANKA-S expands the control coverage further to TURKSAT 4B's geographical coverage area. The ANKA-S can be commanded through satellite and land data links such as TAFICS independent of take-off and landing base. The ANKA-S Operation Center can operate six



UAVs simultaneously via Ku Band satellite links with 10 Mbps bandwidth capacity. The center has ability to store, distribute and backup all the data including videos/images coming from all Anka-S Systems.

In the Anka-S system where information and data security are maximized, all communication is provided by encrypted data transmission while hardware encryption is used in national IFF and radio communication. While the data records are protected by the national encryption solution, Anka-S is made ready for all kinds of negative scenarios and difficulties that may occur at theatre with full redundant automatic take-off and landing systems.

Regardless of departure airfield, the air vehicle is capable of landing at emergency bases, while in the event of any link loss, the air vehicle will be

able to land fully autonomous. The Anka-S systems will also be capable of mission-focused flight with a camera-guided flight mode and fully autonomous flight capabilities.

The Anka-S system will also perform recognition, tracking and marking tasks as well as CSAR missions with the next generation electro optical / infrared camera, and will also provide user air-to-ground / ground-to-ground communication support through radio relay.

Within the scope of the program, the Anka-S project was initiated on October 25th, 2013 catering to the requirements of the Turkish Air Force (TAF). According to the contract signed between SSM and TAI, ten (10) Air Vehicles, twelve (12) Ground Control Stations (GCS) and related ground support equipment are specified within the scope of the project.





Under the auspices of the
**PRESIDENCY OF THE
REPUBLIC OF TURKEY**

Eurasia Airshow will bring together the global and regional players of the commercial and military aviation industry in Antalya between 25-29 April 2018. The Eurasia Airshow will serve as a platform that combines the capabilities and power of global players with those of Turkey across the entire aviation ecosystem

We Rise Together

It can be said that no matter how important it is to gather these players of the aerospace industry, just as in the defense industry, the existence of the governmental representatives and decision makers in this organization is also amongst the most critical criteria. In order to actualize such official visits, the official invitations need to be summoned to relevant authorities.

To this end, invitation letters were sent to 42 countries worldwide counterparts with the precious support of Undersecretariat for Defense Industries. These official invitations have been sent to the civil authorities of 192 countries by the General Directorate of Civil Aviation under the Ministry of Transport, Maritime Affairs and Communication.

Turkey holds the rotating presidency of the Asian Civil Aviation Conference. We will

also welcome civil aviation authorities of all countries in Asia at Eurasia Airshow. In addition to the major players of the industry, we attach great importance to the participation of the Small and Medium Scaled companies and their demonstration of capabilities in the Eurasia Airshow. Having said that, in order to enable our companies to introduce themselves to the world and extend their business volume through new contracts, we applied to the domestic event support of KOSGEB and our event has been included in this scope.

If the Small and Medium Scaled companies meet the required criteria, the stand areas of a total of 1,250 square meters will be supported by KOSGEB and within the scope of this support, the companies deemed suitable will be able to take part at this area. Our minimum support area for the companies achieving the required support criteria will be 50 square meters and the final

Bronco Demo Team



**65 Business
Chalets
And Static Display**

**Exhibition Area
for More Than
100 Aircraft**

**150
Military And
Civilian Delegations**

**300.000
Square Meters
Of Which 50.000
Square Meters
Will Be Designated As Indoor Space**

**100.000
Professional
Visitors
From Over
100 Countries**

**500
International
Exhibitors**

application date was identified as 18 April 2018. Moreover, we have gained the support of the Procurement Committee of the Ministry of Economy. With this support, a government supported negotiation will be achieved by inviting our companies with products of export potential and the purchaser and decision makers abroad to the Eurasia Airshow. In addition, the Eurasia Airshow has arranged its part within the event schedule of TOBB for 2018.

Turkish Airlines -Eurasia Airshow "Airlines CEO Summit" & Golf Tournament

We plan to achieve a breakthrough at the Eurasia Airshow. We are inviting the CEO's of 27 Star Alliance member airline companies to "Airlines CEO Summit" at the Eurasia Airshow with the support of Turkish Airlines.

This summit, in which the topics such as world's developing airway networks, the 3rd airport of which the first section is planned to be launched this September in Istanbul, and the future of airline transport, will be examined and it is of great importance for the airline companies and suppliers. In addition to the "Airlines' CEO Summit", we are organizing a Golf Tournament with the Turkish Airlines partnership and we will benefit from the vast experience of Turkish Airlines in this area. As known, the aerospace industry network is highly interrelated with golf and Antalya owns one of the world's most beautiful golf courses and hotels. Thus, the Eurasia Airshow will bring together these three components.



Breathtaking Aerobatic Shows

Realizing an Air Show concept in Turkey through the Eurasia Airshow is our greatest target. Our written correspondence with the 7-8 countries which we plan flight demonstrations continue as well; they all have certain schedules and we work on taking part in these schedules.

Aerobatic solo and teams we have confirmed till now are; Air Benders, Artur Kielak, Dario Costa; Bronco Demo Team; MIG 29 from Poland and Gripen from Czech Republic.

Besides, not only these breathtaking flight demonstrations exist in our schedules, we also wish to make an organization in which the fans will seize the opportunity to meet the pilots and teams.

Oğuzhan Yararcan
Airbenders Team Captain

Women in Air & Space Symposium

Women who have great success in our country and in the World as entrepreneurs, academicians, pilots and scientists will be brought together at the "Women In Air & Space Symposium" at Eurasia Airshow.

Panel titles of this symposium, which will consist of four panels and last for one day;

Panel I : Entrepreneurship

Panel II : Aerospace

Panel III : Women on Clouds & Ground

Panel IV : Academical

It will be an important organization in which world aviation women with great successes in related issues will share their experiences.

The Eurasia Airshow Brings Together Aviation Giants of the West and East.

The Eurasia Airshow will also be a platform that will be attended by the industry's decision makers, the producers of commercial and military aircraft, sub-components and systems.

We are honored to invite you to attend the Eurasia Airshow, as our guest, which will be a gathering point for the aviation industries' key players, from West to the East.



PARTICIPATION TYPES

① Space Only

② Schell Scheme

③ Chalet Types

- 1- Single Storey (7x13 / 91 sqm)
- 2- Large Single Storey (10.5x13 / 136.5 sqm)
- 3- Double Storey (161 sqm)
- 4- Large Double Storey (241.5 sqm)

④ Outdoor Space

- 1- Booth Space Only
- 2- Booth Tent

⑤ Aircraft Display Area

Aselsan Launched the Serial Production of Missile Hunters

Aselsan has signed the serial production contract with Turkish Undersecretariat for Defense Industries (SSM) for the Air Defense Fire Control System (FCS); Modernized 35 mm Towed Guns and 35 mm Airburst Ammunition (ATOM)

The activities within the scope of the contract signed between Aselsan and the Undersecretariat for Defense Industries on 29 December 2017 regarding “35 mm Air Defense System Modernization and Procurement of Airburst Ammunition” were initiated with the signing ceremony held on 15 January 2018. Undersecretary for Defense Industries Prof. İsmail Demir and many senior officials from SSM and the Turkish Armed Forces attended the ceremony.

The systems to be produced under this contract shall be delivered to the Turkish Land & Air Forces. These systems merit



© Aselsan



© Aselsan

“Missile Hunter” rank with the live firing trials conducted on December 1st, 2015. During the trials, effectiveness of Aselsan

systems against air-to-ground missiles was successfully demonstrated with a highly challenging test scenario. The Air Defense Fire Control System (FCS), 35 mm Modernized Air Defense Guns and 35 mm Airburst Ammunition are all uniquely designed and developed by Aselsan.

Within the scope of the “35 mm Air Defense System Modernization and Procurement of Airburst Ammunition” Project, the serial production activities of the 35 mm Towed Guns and 35 mm Airburst Ammunition (ATOM), which were developed

by Aselsan, the first samples of which were delivered to the Land Forces Command in 2016, will be conducted. In addition, the Battery Command Control Center (BKKM) for the Land Forces Command and the Battery Command Control Operation Center (BKKHM) for the Air Forces Command will be developed and mass produced as top-level command control elements of such systems.

The systems included in the Land Forces Command's inventory in June 2016 made a strong impression by directly hitting the target airplanes during





the “Ateş Serbest 2017” operation conducted on 20 October 2017.

The 35 mm Airburst Ammunition “ATOM” is accepted as one of the components of the air defense system developed by Aselsan having an active role in ensuring high effectiveness against contemporary air threats. The 35 mm Airburst Intelligent Ammunition, the development activities of which were initiated with the contract signed with SSM in 2010, was developed by Aselsan together with MKEK and Tübitak-SAGE. The contract signed is a first for Turkey, as it involves the mass production of intelligent ammunition, developed entirely in the country, for use in barreled weapons.

Towed Air Defense Gun

System Platoon is designed to conduct low altitude air defense of military bases and critical assets mainly against air to ground missiles, cruise missiles and UAVs, as well as fixed wing and rotary wing aircraft. All sub-systems from radar to smart ammunition are all developed with the latest technology by Aselsan. These air defense systems together with smart ammunition are among the most advanced low altitude air defense systems in the world.

The Serial Production Activities of “Korkut” System Gaining Momentum

Serial production of “Korkut” Self-Propelled Air Defense

Gun System is also ongoing successfully since 2016.

The “Korkut” Air Defense Gun System is developed for the effective air defense of mechanized troops and mobile units. The system has fire on-the-move capability with a stabilized and unmanned gun turret. The “Korkut” Gun System has capability of firing 35 mm Airburst Ammunition (ATOM) in addition to the conventional type 35 mm munitions. The “Korkut” Gun System –together with ATOM- highly improves the effectiveness of ground based air defense against modern air threats including air-to-ground missiles, cruise missiles and UAVs.



Pakistan's Submarines Entrusted to STM

The contract signing ceremony for the second submarine under the Pakistan Navy's Agosta 90B Class Submarine Modernization Project was held at the premises of Pakistan's Ministry of Defense Production, with the attendance of representatives from Pakistan's Ministry of Defense Production and the Pakistan Navy.

The contract was signed by General Arshad Mahmood of Pakistan's Ministry of Defense Production; Mr. Davut Yılmaz, General Manager of STM; and Mr. Savaş Onur, Naval Projects Director at STM.

The newly signed contract introduced activities for the modernization of a second submarine into the Agosta 90B Class Submarine Modernization Project. While all the systems specified in the main contract will similarly be used in the configuration of the second submarine, additional systems have also been included into the submarine configuration, which will all be reflected in the project's first submarine as well. Furthermore, with this latest contractual amendment, a third submarine as well as various additional systems have been introduced into the project as options.

As part of the modernization project of the Agosta 90B class submarines, STM was – until the very last moment – engaged in a long and challenging competitive process against the French Shipyard DCNS, which is the original designer and producer of the submarines. In the conclusion of the bidding process, STM's offer was found to be commercially and technically superior, and the company was consequently selected as the prime contractor by Pakistan's Ministry of Defense Production.

Under the project, modernization activities will be performed at a Karachi-based shipyard of the Pakistan Navy; the first submarine will be



delivered in 2020, while the other submarines are expected to have their modernizations completed with intervals of one year between them.

The project represents the first time a Turkish company has been selected as the prime contractor for a submarine project conducted overseas. Under the project, STM will be exporting its design and engineering services for the very first time.

In addition to the design, engineering and procurement activities to be carried out as part of the project, STM will also provide integrated logistic support and training services for different units of the Pakistan Navy.

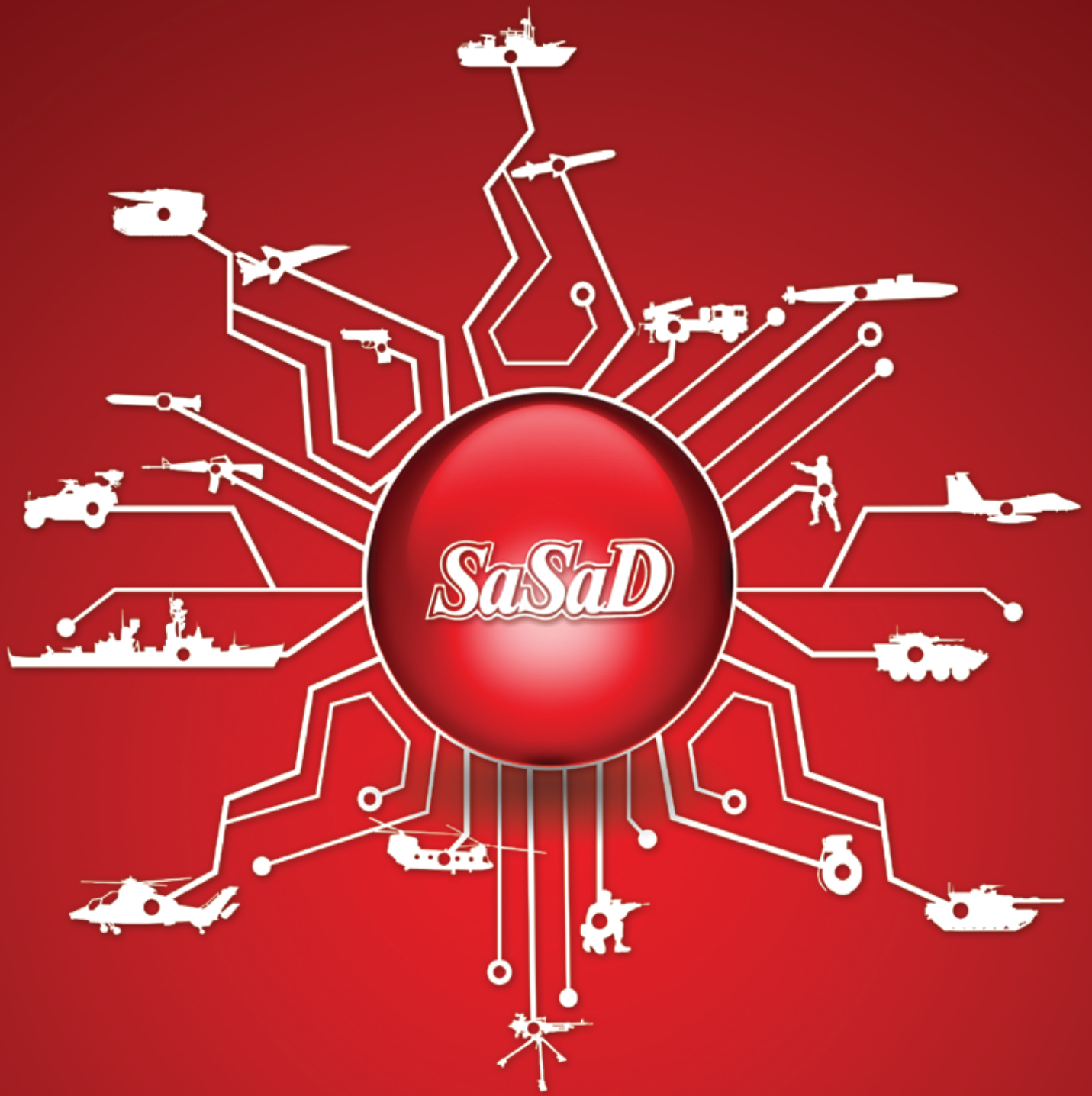
The modernization activities will include the replacement of

the submarine's entire sonar suite, periscope systems, command and control system, radar and electronic support systems. Havelsan and Aselsan-made systems will also be exported as part of the project.

Under the project, STM will make modifications on the pressure hull, the most critical structure in a submarine, by carrying out system-to-system and platform-to-system integrations for various systems, to be provided by local and foreign companies.

The project, which is now in its critical design phase, is successfully moving forward with the significant contributions of Pakistan Navy's personnel and agencies, and in close cooperation between all parties involved.





DEFENSE AND AEROSPACE INDUSTRY MANUFACTURERS ASSOCIATION

www.sasad.org.tr
Turan Güneş Bulvarı 100/18 Akşam Plaza
06550 Çankaya / ANKARA / TÜRKİYE
+90 312 426 22 55 P
+90 312 426 22 56 F
sasad@sasad.org.tr E

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Turkey Contracts Eurosam, Aselsan and Roketsan to Define its Future Unique Air and Missile Defense Systems

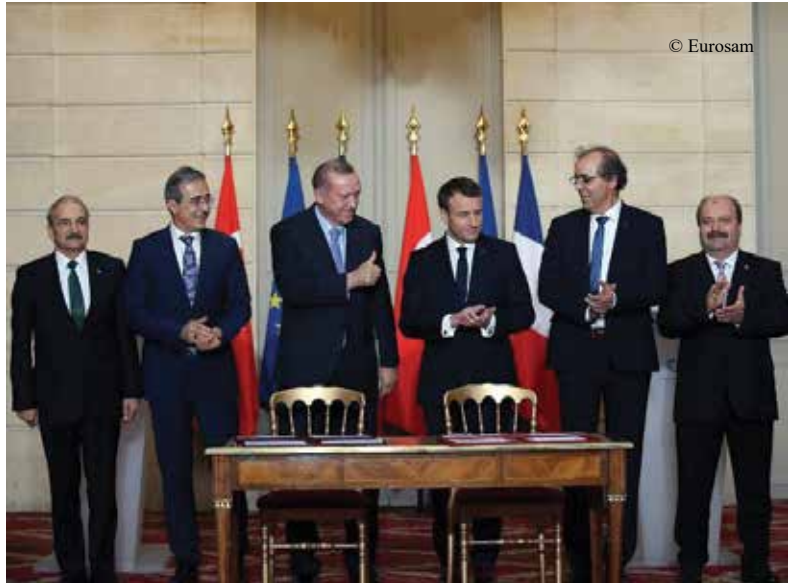
Turkey Contracts Eurosam, Aselsan and Roketsan to define its future unique Air and Missile Defense Systems

Turkey has awarded Eurosam, Aselsan and Roketsan a contract for the definition study of the future Turkish Long Range Air and Missile Defense System. The contract award was made during the meeting of President Mr. Recep Tayyip Erdoğan and President Mr. Emmanuel Macron in Paris on 5th January 2018.

Scheduled to last 18 months, this definition study aims at preparing the development and production contract for the future system meeting the operational requirements of the Turkish Air Force. The contract was awarded by the SSM (the Undersecretariat for Defense Industries), which is responsible for acquisitions under the President of Republic of Turkey, jointly to Turkish companies Aselsan and Roketsan, and to the Franco-Italian consortium Eurosam; backed by its two shareholders MBDA and Thales.

The contract follows on from the Heads of Agreement signed by the Industry on 14 July 2017 and The Turkish, Italian and French defense ministers have signed a letter of intent (LOI) at the NATO ministers of Defense meetings held on 8th November in Brussels, at the NATO headquarters.

This study paves the way for the launch of a three-country joint Long Range Air and Missile Defense Program. The future system will be ready by the middle of the next decade with a state-of-the-art military capability designed to counter the most challenging threats (stealth aircraft, UAVs, cruise missiles, and ballistic missiles). The system is expected to meet three countries' basic operational needs and it will guarantee Turkey



has full employment autonomy and will allow a sovereign choice of integration level within NATO. The joint development activity is expected to support Turkey's unique air and missile development program in addition to opening up prospects for exports and longer-term co-operation of Turkey, Italy and France.

At the signing ceremony of this definition study contract, Abdoulaye Samba, Eurosam Managing Director, stated: "Eurosam has been fully dedicated to air and

missile defense since its inception in 1989 and has acquired world-class expertise as well as a unique experience of co-operation in this strategic and eminently sovereign domain. Today, we are proud to provide this know-how to the co-operation between France and Italy with their Turkish ally within NATO. I am confident that this co-operation will also last several decades and will contribute to bringing our countries closer on a strategic level, as it has been the case for the last thirty years with France and Italy."





FNSS Armored Vehicles Successfully Execute “Passage from Deadwater” Drill

The systems designed and produced by FNSS played an active role in the drill named “Passage from Dead Water.” It was executed in the Thrace region by the 55th Mechanized Infantry Brigade Köprücü Battalion Command. During the drill, the commando units first crossed the shore and took beachhead security for an attack to be performed on the simulated enemy territory on the opposite side of the shore. After the screening smoke, reinforcement units were dispatched to the area with fast boats.

After the area was secured as per the scenario, the related efforts were swiftly launched on the water for the operation of military vehicles. Designed by FNSS engineers, the “Kunduz” Armored Amphibious Combat Earthmover (ACE), which is unique in the world due to its amphibious capability, swam together with other units to arrange the opposite shore and prepare the beachhead for a bridge crossing.

The Armored Combat Vehicle (ACV) and the Improved



© FNSS

Armored Personnel Carrier vehicles produced by FNSS were transferred to the area by swimming in the water together with fully equipped infantry units.

During the exercise, with the Armored Amphibious Assault Bridge (SAMUR) vehicles also designed and produced by FNSS engineers, having the ability

to move on land, the transfer of main battle tanks and other armored and logistics units was accomplished in the bridge configuration.

The exercise, involving 197 personnel and 61 military vehicles, was successfully accomplished under challenging conditions due to rain showers.



© FNSS

New Type Submarine Project's 3rd Vessel 'Murat Reis' First Welding Ceremony Takes Place in Gölcük

The first welding ceremony for the 3rd Vessel of the New Type Submarine Project "Murat Reis" was held at Gölcük Shipyard with the participation of the Prime Minister Mr. Binali Yıldırım, Minister of National Defense Mr. Nurettin Canikli, Minister of Transport, Maritime Affairs and Communication Mr. Ahmet Arslan, Commander of the Turkish Naval Forces Vice Admiral Adnan Özbal and many military and defense officials.

Addressing the invitees at the ceremony Prime Minister Mr. Binali Yıldırım mentioned that he had worked in the ship building industry and therefore the launch of each vessel into the sea and his participation in the first welding ceremonies made him very happy. He added that the New Type Submarines would be contributing to the facilities and the capabilities of the Naval Forces, fulfilling a crucial task toward thoroughly accomplishing the defense of maritime boundaries, interests concerning the seas and the defense of the country in general.

Expressing that the ship building industry achieved a great breakthrough in the last 15 years Yıldırım said, "The number of our shipyards increased to 78 from 37 in the last fifteen years. Meanwhile, we have increased our building capacity to 4.5 million DWT (Dead Weight Ton) from 500 DWT. On account of the support policies implemented, the Turkish Commercial Fleet - owned by Turkey with the Turkish flag - has risen to the 14th rank from 19th in the world-wide ranking."

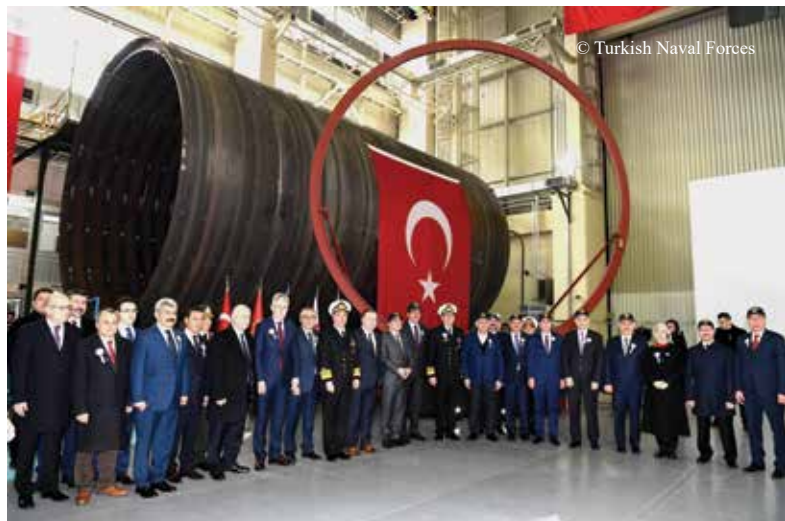
Prime Minister Mr. Yıldırım also informed participants on the New Type Submarines and the infrastructural capabilities of Gölcük shipyard and said, "Murat Reis, of which we will be holding the first welding ceremony, is a



new type submarine. When this package containing 6 submarines is completed, these submarines will be serving our Naval Forces for many years. The new type submarine project continues through German - Turkish partnership. With the help of the project, the infrastructure of Gölcük shipyard is also being improved and this enables the shipyard to further specialize particularly in submarine building. As a result, all the slipways are gained by Gölcük Shipyard. As is known to all, since our existing submarines lack the air - independent delivery systems, they failed to remain underwater for a long time. The demand for the new type submarine emerged

at this very point. Thanks to this project, we will have gained for our Naval Forces the capability of air - independent, submerged, long duration underwater operation."

In the final part of his speech, Prime Minister Mr. Yıldırım noted that the building duration of the submarines was too long, underlining that the Naval Forces Command needs to take more initiative in order to shorten this duration. Yıldırım: "We are building our submarines in a period of around 10 years. This duration needs to be shortened even further. Turkey has attained immense experience in the Ship Building Industry. I wish for our Naval Forces Command to take



the initiative toward shortening these long durations and I hope that the submarines would be gained as a part of our fleet as soon as possible upon the revision of these procurement periods.”

Commander of the Naval Forces Vice Admiral Adnan Özbal stated that 11 submarines were built at Gölcük Shipyard so far and within this context this shipyard is considered to be one of the few shipyards worldwide capable of building submarines, adding that the shipyard's competence would be increasing further as a result of the new type submarine project.

Underlining that the most distinctive feature of the New Type Submarines is their air - independent propulsion system Vice Admiral Özbal continued, “With the New Type Submarines air - independent submarines, the ‘Half Life Modernization’ and the ‘Unique Combat Management System’ which our existing Preveze submarines will be subject to and the ‘Unique Combat Management System’ MÜREN Preveze Projects, our submarine forces will be embracing a more efficient front worldwide.”

Commander of Gölcük Shipyard Rear Admiral Aydın Eken stated that the Turkish Naval Forces' institutional submarine construction exceeds 40 years and added, “Within the period that began with the construction of the TCG Yıldırım Submarine on 25 July 1975 at our shipyard, 11 submarines were built up until today. Within this context, our shipyard has gained the capability of building submarines which are capable of creating surprises during naval warfare and has become one of the 16 shipyards worldwide.”

Rear Admiral Eken underlined that Gölcük Shipyard would be gaining crucial know-how with the help of the New Type Submarine program and concluded, “As part of the New Type Submarine Project, our staff has been regularly and actively attending the design activities. I can claim that as a result, the know-how and experiences of our shipyard in design have gravely increased as a



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result. We assess that this know-how gained will be intensively utilized in the first phase of the Indigenous Submarine design activities which will be launched in the upcoming period.”

Upon the completion of the remarks, Prime Minister Mr. Binali Yıldırım conducted the first welding of “Murat Reis” - the third vessel of the New Type Submarine Project.

The New Type Submarine Project

A total of six new types of submarines will be constructed within the scope of the project will have an air independent propulsion system developed with hydrogen Fuel Cell Technology and will be capable of conducting their operations for weeks underwater. With their entry into operation, these submarines with silent navigation capability will make

a significant contribution to the combat effectiveness of the Turkish Naval Forces.

The New Type Submarines will be 66.3 meters in length, with a thousand and 854 tons of surface displacement and 2 thousand 13 tons of submerged displacement. The submarines will run with diesel fuel and will be able to function with self-charging batteries. One of the most significant features of the new type submarines is the development of torpedo tubes that will provide guided missile firing capability.

The contract for the procurement of New Type Submarines equipped with an air-independent propulsion system was signed on 02 July 2009. At the end of the two-year period including financial consultations regarding the project, the contract was effective on 22 July 2011.



STM Publishes Cyber Threat Report

STM's Cyber Threat Report prepared for the period of October - November - December 2017 was published on 20 January 2018

This report published quarterly by STM covered the last quarter of 2017 and touched upon the issues such as cyber-attacks, malware, cyber vulnerabilities and cyber security infrastructure. It was stated in the report that wide spreading of ransomware emerged through various applications, that attacks towards banking and financial systems and mobile technologies increased and that threats caused by data breaches stood out more in 2017.

The report also underlined that the utilization of artificial intelligence in the area of cyber security for defense purposes would continue to increase and it was mentioned that from the perspective of the activities conducted by STM, artificial intelligence may prevent the attacks during cyber threat hunting, secure code development and test stages, thus identify and abolish vulnerabilities before they cause any harm. Moreover, the report declared that with the utilization of artificial intelligence in patch management, which has been a major problem for years, the rapid and smooth execution of operations requiring intensive effort would be enabled as well as the test procedures prior the patch and whether or not the patch would cause any problems in another application.

The report envisioned that malware using artificial intelligence would become one of the greatest issues facing cyber security world in the near future and malware capable of perceiving its environment will be able to shape decisions such as monitoring, data collection, muting and bypassing security products just like a human being according to the platform in which they exist. In light of these developments, it was underlined that the utilization of artificial intelligence applications as some sort of cyber weapon in the hands of attackers would be in question.

Access to Personal Information through Malware "Meltdown" and "Spectre"

In the report, the common target of the malware "Meltdown" and "Spectre" that emerged at the end of 2017, was the storage isolation in processors such as Intel and AMD, no matter how the methods of attack varied; it was stated that as a result of the extensive usage of the aforementioned processors, this attack method affecting almost all of the current information systems allowed the attackers to reach sensitive data (password, username, etc.) in the systems of the victims. Many companies releasing updates for preventing "Meltdown" and "Spectre" attacks advised their users to update all the applications in the systems immediately and suggested that they follow the new updates to be announced.

Endoscopic Device Used in ATM Attacks

The report underlined that ATMs became the target of cyber-attacks with a quite interesting method in the last quarter of the year. Endoscopic devices discovered 150 years ago were used in attacks by cyber attackers to trick the sensors of the ATMs to reach the money inside the machines with the help of the lights and cameras of these devices. The report additionally mentioned that as a result of the examinations made by security experts, following the detection of the attacks made with the endoscopy method, emergency embedded software update was released by the NCR to prevent these attacks and after the update no other attacks were reported. It was also stated that the internal communication of the cash distribution units of the ATMs should be encrypted to protect them from black box attacks.

In this way, the commands sent directly to the cash distribution unit of the ATM by the attackers would be perceived invalid and merely the commands over the ATM software would pass the identity detection and be processed.

STM's 2018 Cyber Threat Forecasts

In the cyber threat forecasts for 2018 section of the report released by STM; in addition to the fact that artificial intelligence applications are becoming popular among attackers, the attacks towards applications without servers would increase, IoT devices would more frequently be both the victim and the mediator of cyber threats, ransomware would continue to be a critical threat even if by altering its form, cyber security would be expanding its domain, attacks towards the healthcare industry and critical infrastructures would increase, and that cyber threats towards mobile devices and ultimately to crypto currencies would be more popular on the agenda.

Ransomware Threat will not Decelerate

The report has foreseen that ransomware, which is the easiest way of making money from the victims of cyber attackers, would become one of the greatest threats in 2018, assessing that the quite active state of the Ransomware-as-a-Service under the crime menu of the CaaS (Crime-as-a-service) has been a critical clue signaling the continuity of the threat of ransomware. According to STM's Cyber Experts, in 2018 attackers will be tending towards targets that allow them to gain more money. Within this scope, as a result of their swift appreciation, crypto currencies will be very attractive to cyber attackers.

Aselsan Strengthens its Presence in Malaysia



Within the scope of the contract signed between Aselsan and a Malaysian shipyard, the 30mm SMASH Remote Controlled Stabilized Naval Gun System and the 12.7mm Machine Gun will be integrated to the boats to be manufactured as per the requirements of the Malaysian Coast Guard Command.

The deliveries are planned to be completed between 2019 and 2020.

Aselsan's Remote Controlled Weapon Systems, which are currently taking part in the inventories of the Turkish Naval Forces Command, Coast Guard Command, Land Forces Command and the Security General Directorate, were preferred by The Armed Forces of a total of fourteen countries apart from Turkey.

Such a contract is also important for the continuing increase of Aselsan's exports of Weapon Systems to the Southeast Asian region. In 2017, Aselsan exported six 30mm SMASH Remote Controlled Stabilized Naval Gun Systems to Malaysia as part of the Malaysian Coast Guard Command's requirements.

Equipped with 30mm weapon, SMASH is a Remote Controlled Stabilized Naval Gun System with high stabilization performance and automatic target tracking capability. It is regarded as a versatile and effective system that can be integrated into warships, coast guard and patrol boats, landing ships and other maritime platforms.



Hürkuş- B Accomplishes Maiden Flight

Hürkuş-B, which is planned to take its part in the inventory of the Turkish Air Forces in the second half of 2018, successfully carried out its maiden flight. Following this maiden flight, various tests on critical topics such as engine, avionics, stability and flight excellence shall be applied to the aircraft. After 90 hours of planned sortie flight, it is planned to enter into the Turkish Air Forces inventory.

In his speech following the maiden flight, TAI President & CEO Assoc. Prof. Temel Kotil said that the capability and dynamics of the Hürkuş-B equipped with military standards have been increased following the completion of the Hürkuş-A configuration, the airworthiness certification of which was completed and is ready for use: The configuration of the Hürkuş-B is a modern, powerful aircraft that is 100 kilos lighter, faster more modern and stronger than the configuration of Hürkuş-A. This variant was designed for a more stable and more comprehensive aircraft."

While emphasizing Hürkuş-B as the best in its class, it has been clarified that particularly the cockpit and all systems such as ejection seats, oxygen support, and landing gears weight resistance have been designed as a jet cockpit.



SSM R&D Projects Signing Ceremony

In order to achieve the goal of allocating 3% to R&D within the scope of Turkey's ambitious 2023 vision, a decision was made to hold an R&D panel by the Undersecretariat for Defense Industries (SSM) and to this end the very first SSM panel on R&D took place on 22 December 2016 with the participation of the shareholders of the industry. At the R&D panel of SSM, decisions were made on launching projects required for the Turkish Armed Forces' (TAF) existing or planned systems and platforms or projects on new technology areas. Wide area paging for projects consisting of technical projection which at the same time do not contain end product delivery were also decided



Prof. İsmail Demir - Undersecretary for Defense Industries

to be accomplished. As a result of these decisions, and in order to negotiate the issues discussed, the parties met three times within 2017 and decided to launch 22 projects and make wide area paging (SAGA) in six areas.

Within this scope, the contracts of 14 projects, the preparatory studies of which were finalized, were signed on 26 January 2018 at a ceremony with the participation of the Undersecretary for Defense Prof. İsmail Demir.

The contract model of the projects was built on the cooperation between SME- Industry- University and 11 universities including the Anatolian universities and 3 TÜBİTAK institutes will be taking part as either main contractors or sub-contractors.

As a result of these projects that aim to transfer know-how



and technology to industry and to transform the technology into products by the industry, with a focus on acquiring the technology and components required by the platforms and main system projects' sub systems such as military radios, public security broad band communication network, intelligence systems.

Especially with the local production of the critical material utilized in aerospace applications, Turkey's foreign dependency in this area will be reduced significantly and critical material in destruction technologies will be manufactured uniquely. Moreover, through the development and domestic manufacturing of semi-conductive components utilized by radar applications, the capabilities of



radars will be increased, thus enabling one of the most crucial technologies required for their total national production would be acquired. In addition, technological activities required to render underwater communication of the military units more secure will be accomplished.

The R&D projects with signed contracts are as follows:

SDN and NFV Based 5G Evolved Package Core Development (ÇINAR)

This project will be conducted as part of the Undersecretariat for Defense Industries' technology acquisition road map, under the contractor ship of ULAK A.Ş. and Aselsan and Argela will be the sub-contractors.

Social Media Anomaly Detection, Incident Tracking and Analysis (HAVADİS)

Within the scope of Undersecretariat for Defense Industries' road map on technology acquisition, this Project will be executed by DataBoss Bilişim and Enerji ARGE Mühendislik Ticaret Sanayi A.Ş. as the contractor and Gebze Technical University and TOBB ETÜ University as sub-contractors.

Deep Learning Big Data Analysis Platform (DEĞİRMEN)

As part of Undersecretariat for Defense Industries' road map on technology acquisition this Project will be conducted by the Firat University as the contractor of the project.





Gazi Rector Prof. Dr İbrahim Uslan, Prof. İsmail Demir, TEI General Manager Prof. Mahmut Akşit

Multi - Dimensional Wireless Communication Signal Analysis Platform (KAŞİF)

TÜBİTAK BİLGEM will be the contractor and Yıldız Technical University, İstanbul University of Commerce and Medipol University will be the sub-contractors of this Project to be accomplished as part of the Undersecretariat for Defense Industries' road map on technology acquisition.

Source Management Algorithms on Cognitive Radio Networks and Development of a Test Simulator (KAYA)

As part of SSM's technology acquisition road map, the contractor of the project will be Ankara University and its sub-contractor will be Aselsan.

Interference Management in Cognitive Radio Networks (HİZA)

Within the scope of SSM's road map of technology acquisition, this Project will be executed by the İTÜNOVA Teknoloji A.Ş. as the contractor and İstanbul Technical University as the sub-contractor of the Project.



Prof.İsmail Demir; Prof. Alper Ünal - İTÜ Vice Rector

Developing New Generation Material for Domes and Optical Windows (KUBBE)

This Project will be conducted by Aselsan as the contractor and TÜBİTAK MAM and TÜBİTAK SAGE as sub-contractors, in accordance with SSM's technology acquisition road map.

Developing Nickel Metal Powder suitable for Additive Manufacturing for Aerospace Applications (ATOM)

As part of the technology acquisition road map of the SSM, the Project will be executed by the contractor TUSAŞ Motor Sanayii A.Ş. and sub-contractors Ermeksan Makine Sanayi ve Ticaret A.Ş. and Gazi University.

Developing Refractory Material for Missile Jet Wing Applications (REFRAKTER)

TÜBİTAK MAM will be the contractor and Roketsan will be the sub-contractor of this Project to be conducted as part of SSM's road map of technology acquisition.

Project on the Development of Titanium Additive Manufacturing Process with Electron Beam Melting (ELEKTRON)

This Project will be executed by the contractor TAI and sub-contractor Sabancı University as part of the road map on technology acquisition of the SSM.

Aerospace Stainless Steel and Nickel Based Super Alloy Development (DİNÇ)

Within the scope of the Undersecretariat for Defense Industries' road map on technology acquisition, this Project will be conducted by the TAI as the contractor and by TÜBİTAK MAM and Akmetal as sub-contractors.

GAN Based G/A Module Components Development (AKASYA)



Prof İsmail Demir; Dr. Faik Eken- General Manager of Aselsan

The Project will be conducted by the contractor Aselsan in line with SSM's technology acquisition road map and AB Mikro Nano A.Ş. and KUPFER LTD. ŞTİ. will be the sub-contractors.

Development of the GAN Based High Performance Integrated Circuit operating at Millimeter Wave Band Project (MOGAN)

In accordance with SSM's technology acquisition road map, this Project will be executed by the contractor Meteksan Defense and Bilkent University Business Partnership.

Development of Powdered Thermobaric Explosive – (VOLKAN)

With this Project, thermobaric explosives with long-term impulse/ pressure/ vacuum and heat effects and high destructive power will be developed.

In line with SSM's technology acquisition road map, the Project will be conducted by TÜBİTAK SAGE as the contractor and by TÜBİTAK MAM and MKEK as the sub-contractors.



TSKK 5th Project Market Takes Place in Ankara

The fifth ODTÜ Teknokent Defense Industry Cluster (TSSK) Project Market was held in Ankara under the auspices of the Undersecretariat for Defense Industries, organized with the cooperation of Middle East Technical University (METU), ODTÜ Teknokent, Ankara Chamber of Industry and Defense Industry Manufacturers' Association (SaSaD) and with the participation and support of defense industry main contractors and supported by TÜBİTAK (Scientific and Technological Research Council of Turkey) and KOSGEB (Small and Medium Enterprises Development Organization).

A total of 44 companies and 3 Research Institutes of Universities attended with the booth level at the 5th Project Market where the products and capabilities of the companies operating under the roof of the TSSK.

TSSK Chairman of the Board Mr. Fatih Ünal: "The export performance of TSSK companies reached \$135 million"

In his speech at the opening ceremony of the event held at METU Cultural and Convention Center, TSSK Chairman of the Board Mr. Fatih Ünal mentioned that the Cluster has attained 124 members, and with the 2100 R&D staff employed at these companies focused on defense and aerospace activities, the TSSK member companies' export performance exceeded \$135 million last year, adding that its total turnover reached 1.4 billion TL. Underlining that the main objective of the TSSK Cluster is innovation and development of R&D, Mr. Ünal said, "We especially aim to render the university - industry and industry - industry cooperation more effective."

Stating that this year they are realizing the fifth project market event, Mr. Ünal stated that they aim to create an atmosphere where the major players and minor shareholders could seize the opportunity to closely examine the requirements, capabilities and products of each other. Mr. Ünal: "Our companies under the roof of the TSSK have been focused on fulfilling the critical technology requests of our major industry companies and our



country while providing cost efficient products which are competitive in the international markets to our companies and acquiring for our country the products subject to ITAR on which we have foreign dependency. With the help of this event, enabling effective negotiations and new cooperation between our companies will be possible."

ASO President Mr. Nurettin Özdebir: "Ankara is the city conducting the most precious production in Turkey with its export price of 23 USD/kg"

President of the Ankara Chamber of Industry (ASO) Mr. Nurettin Özdebir underlined that in order to achieve the determined economic goals, Turkey needs to leap from the medium technology segment to the high technology segment and pointed out that the most critical city in the country able to achieve this goal is Ankara.

Noting that 13 organized industrial zones composed of 7 zones in operation and 6 zones under production stage are located in Ankara, Mr. Özdebir underlined that 14% of the companies making advance technology utility model registration, 15% of the companies conducting R&D activities, 13% of the companies executing high technology production and 28% of the R&D engineers are located in Ankara. Stressing the fact that Ankara alone hosts 30% of the high technology investments, Mr. Özdebir continued, "With its export price of 23 USDs/kg, Ankara is the city conducting the most precious production in Turkey. 34% of the production conducted in manufacturing industry of Ankara

is composed of high and medium technology and within this scope, Ankara is the leader in high technology production. Besides, Ankara has been hosting four of the 10 research universities and institutes. This may gain great momentum to Ankara's industry in the medium and long run. If the correct mechanisms are designed, the cooperation between the university and the industry, which could not be fully built until now, may be achieved in real sense. One of the areas in which Ankara is most powerful in respect of high technology is the defense industry. The most popular defense industry companies also including software are located in Ankara. This bears great importance not only considering the independence and security of our country but also concerning the global competitive power of our economy. Due to the geopolitical and geo-strategic position of our country, the development level of the defense industry is of vital importance. The defense industry plays a leading role in technological developments. Many products utilized today in our daily lives have been developed on account of the defense industry. The companies operating in Ankara are focused more on high technology areas compared with both Turkey's average and other developed economical regions. The impact of the leading associations of our defense industry in Ankara's relatively advanced stance in technological development could not be dismissed. So far, these associations assumed the role of an academy for our sub-industry. OSTİM (Middle East Trade and Industry Center) being in the first place, numerous SMEs that

are the members of ASO seized the opportunity to improve themselves by providing end products and bulk products for our defense industry. However, despite all these positive developments, our domestic industry and the potential of Ankara should be developed further in fulfilling the demands of our armed forces.”

Vice President of the Small and Medium Industry Development Organization Mr. Salih Tuna Şahin: “95% of Turkey’s exports are composed of industrial products and 60% of the products we export are composed of imported input material”

Vice President of the Small and Medium Industry Development Organization (KOSGEB) Mr. Salih Tuna Şahin stated that KOSGEB’s main objective is to increase the competitiveness of the SMEs and achieving their integration with the industry and continued: “As part of this main objective, through 10 different support programs KOSGEB has been providing support to SMEs with various financing models, laboratory studies, information and cooperation activities. Similar to many other institutions, KOSGEB has been conducting its activities while reviewing its activities and the support it gives in certain periods in order to restructure itself in accordance with the contemporary conditions. Within this context, we have determined a new vision and model for our organization. Our new vision and new model in this period stands over 10 foundations. These foundations are; granting support to the products which will decrease the current deficit, extending the high technology through domestic and national SMEs, taking the companies that manufacture high level of added value into the scope of SMEs, generating support models specific to the industry, developing new financing models, developing thematic business incubators, building cooperation between major businesses and minor businesses, establishing the infrastructure for the required researches by building the SME and entrepreneurship institute and acquiring the SMEs the competency assessment system for building this projected model revision over concrete foundations.”

Summarizing the focal point of



the activities conducted within this scope as technological innovation or development, technology based entrepreneurship, rendering SMEs as international brands, increasing the scales, added value production and competitive SME companies, Mr. Şahin said, “95% of our country’s exports are composed of industrial products. Then again, 60% of the industrial products we export are composed of the input material we imported. Among the products we import, there are products which could be easily manufactured by our SMEs. On the other hand, there are also products that could be manufactured practically in our country with certain support mechanisms. Taking these into consideration, instead of providing general support to the SMEs, we developed two different support models that will enable the production of technological products, reduce foreign dependency and support domestic and national production. In both models, by supporting privileged and crucial investment projects, we are offering a comprehensive service. The related parties provided critical contribution to our organization in the preparation and implementation of these programs. For their continuous support and cooperation as part of these programs, once again I would like to thank the related parties firstly to SSM, Havelsan, TOBB, TÜSİAD, MÜSİAD, TIM, TAI and SaSaD and our shareholders.”

Mr. Şahin: “Through Technological Investment Support Program, we support investment in technological products with completed

prototype phases in priority industries. The limit of our support per each project is 5 million Turkish Liras”

Expressing that the first program they launched was the “Technological Investment Support Program”, Mr. Şahin continued: “As part of this support program, with the investment projects, we aim to commercialize the products emerging as a result of the R&D activities in priority technology areas, acquiring more added value to our country’s economy, and increasing the export of the technological products in the international markets. We support the investment in technological products with completed prototype stages within the priority industries. The limit of the support is 5 million TL per each project and the duration of the project is 36 months. At this point, in respect to the machinery and equipment and software costs that compose the most critical item of the investment projects, we are providing supports that reach 100%”.

Mr. Şahin: “Today we will sign the protocol on the Strategic Product Development Program with ODTÜ Teknokent”

Underlining that reducing the current deficit is one of the most critical issues, Mr. Şahin stated that through developing the technological production capabilities of SME companies, indigenization of strategic products with high import levels and utilization of more domestic inputs are aimed. Şahin: “To this end, we launched the ‘Strategic Product Support Program’ as the second program. Within the scope of this

program, we wish our SMEs to cooperate with the buyer shareholders and major businesses and to this end we aim for the indigenization of strategic products with high import level, utilization of more domestic inputs in production, development of technological production capabilities of the SMEs and extending the technology. Again, as part of this program, our support maximum limit is 5 million TL per business and the duration of the project is 36 months. Within this context, we sign a strategic product support program protocol with ODTÜ Teknokent. With the cooperation protocol that we will sign, we aim to allow our companies in METU Teknokent to benefit more from the KOSGEB support and from the support programs particularly based on investments."

Deputy Undersecretary for Defense Industries Dr. Celal Sami Tüfekçi: "With the EYDEP program, we are setting up a mechanism that will create the measures and support to increase the technological and production competence of our SMEs"

Deputy Undersecretary for Defense Industries Dr. Celal Sami Tüfekçi underlined that Turkey made its choice in the defense industry area and became a country developing its own independent technology, adding that Turkey left its understanding of being dependent to other countries and constantly searching for the approval behind. Dr. Celal Sami Tüfekçi continued: "Yet, making this choice is not sufficient alone. We must take big steps that will strengthen this choice in the upcoming process. While making new investments in the defense industry, a country needs to develop the technologies that will serve such investments."

Stating that they act in line with the deductive method to achieve technological competence, Dr. Tüfekçi stated that they proceed towards material technologies from additive manufacturing processes with a multi-layered understanding. Dr. Tüfekçi underlined that there is an industrial aspect of the issue as well as the technology dimension and added: "There are SME companies of different scales in many other clusters as well as the TSSK cluster. Until now, while we assessed the competence of



these companies with the evaluations of the major main contractors, as the Undersecretariat we rather used to conduct the contract management at the office. But from now on, we decided that it is time to leave the office and try to better understand the difficulties our SMEs have been going through regarding the defense industry and we should generate solutions for these problems. To this end, we launched the Industrial Competence Assessment and Support Program which we shortly refer to as EYDEP. Nowadays, in order to conduct this program, supervisors not only monitor these companies but also work on ways to support these companies under the auspices of our Undersecretariat. Yet, we are aware of the fact that in the end our Undersecretariat is a governmental institution, thus we wish EYDEP to be transformed into a more independent platform, finding its own identity. We truly wish this journey that started in the defense industry to serve other areas of the industry since industrial competence is the area in which our industrialists from every industry face the most difficulties. With the EYDEP program, we would like these companies to become subcontractors that will be among the medium and large-scale companies to provide smart subsystems to our foundation companies in the defense industry. I believe that we will achieve this in the near future and that EYDEP will play a major role in this."

METU President Prof. Mustafa Verşan Kök expressed that ODTÜ Teknokent host over 100 defense industry companies and added that it becomes an eco-system where technologies strategic for our country are developed. Kök: "We are aware of the fact that the development of our country depends on the development of domestic and national technologies and we have been conducting numerous activities and programs to this end. Within this context, we will be signing a crucial

cooperation today. By signing the cooperation protocol as part of the KOSGEB Strategic Product Support Program, we will have established a new channel for supporting the development of the strategic technologies at ODTÜ Teknokent. I would also like to express my gratitude to the President of KOSGEB for such support. Presently, under the auspices of the Undersecretariat, the 5th project market event organized with the cooperation of METU, ODTÜ Teknokent, ASO, SaSaD and with the support of TÜBİTAK and Ministry of Economy, is of great importance in respect to creating an atmosphere for the main contractors of the industry to reveal their expectations and targets and allowing the opportunity for the research institutes and SMEs to share their capabilities. I believe that this year we will build productive cooperation and improve the existing relations, similar to previous years. I would like to thank all our institutions for their support in this important event and to everybody for their contributions, and to the employers of ODTÜ Teknokent."

Following the opening remarks, in respect to unique production of intermediate goods with high import potential and with the quality of strategic products, a cooperation protocol was signed between KOSGEB and METU. The protocol was signed by METU President Prof. Mustafa Verşan Kök and KOSGEB President Prof. Cevahir Uzkurt.

During the second half of the day, companies provided further details regarding their projects via various presentations in two different halls.



KOSGEB President Prof. Cevahir Uzkurt, METU President Prof. Mustafa Verşan Kök

TAI and Turkish Technic Signed Cooperation Protocol to Develop Aerospace Market

A cooperation protocol was signed between TAI and Turkish Technic for the purpose of the development of the aerospace market and the activities performed in Turkey.

With the protocol signed by TAI General Manager Assoc. Prof. Temel Kotil and Turkish Technic General Manager Mr. Ahmet Karaman, TAI and Turkish Technic will cooperate in key areas such as airplane parts manufacturing, repair, maintenance and renovation, and maintenance and modification of military aircrafts.

Emphasizing the importance of the cooperation protocol signed, Assoc. Prof. Temel Kotil said: "This protocol aiming to work together with an institution like Turkish Technic that provides significant technical service support for the development of aviation/aerospace activities primarily for R&D activities is a notable development for the aviation/

aerospace industry of our country."

In his speech regarding the cooperation protocol, Mr. Ahmet Karaman, General Manager of Turkish Technic said: "We are able to design, manufacture, maintain and modify our own aircrafts today on our journey aiming to minimize foreign dependency in aviation/aerospace and especially in the defense industry. We are pleased to contribute to the development of the aviation/aerospace and domestic industry of our country by combining our experience and know-how in R&D, engineering, component manufacturing, maintenance, modification and modernization with TAI which is amongst the leading companies in the defense and aerospace industry."

TAI and Turkish Technic, which will carry out R&D activities by working together for the development of aviation/aerospace activities, will also cooperate



for the exchange of personnel between the two companies, especially the engineers in parallel with their needs. Turkish Technic will be used as a primary source for the related logistics support and modification of the military air platforms that TAI undertakes as the main contractor.

The Parties aim for the involvement of Turkish Technic's R&D and other departments in all of TAI's unique air vehicle manufacturing projects, of which the Turkish Fighter Jet project being in first place.

Bolstering Local Producers & Local Production, Aselsan - KOSGEB - OSSA Focus on Boosting SME Business Volume

Aselsan, one of the leading companies of the Turkish defense industry, came together with OSSA members and subcontractors of Aselsan under KOSGEB's "Strategic Product and Technological Investment Support" at the OSTİM OSB Conference Hall to contribute to the development of SME business volume. Following the detailed presentation made by

KOSGEB Expert Mr. Murat Altun, at the meeting where over 100 industrialists were in attendance, the Q&A session was held and the questions from participants were responded to regarding support mechanisms and they expressed their satisfaction with this meeting.

In order to contribute to the Turkish defense industry, KOSGEB support continues

to enable SMEs to become involved in the system as well as to become more competitive. As a result of domestic promotion with the support of KOSGEB, the gathering of SMEs aims to provide added value to the country's economy by fostering growth in the sector through the OSSA, strengthening local producers and enhancing local production.

SAHA Istanbul Cluster Holds “Current Incentives Information Meeting” for Members

The SAHA Istanbul Defense and Aerospace Clustering Association conducts activities encouraging industrialists to take an active role in Turkey's nationalization movement. The “Current Incentives Information Meeting” was recently held and incentives for companies wishing to execute production in the defense industry were presented

Building a cornerstone in the Marmara region in Turkey's nationalization movement, the SAHA Istanbul Defense and Aerospace Clustering Association organized a meeting that presented the incentives provided for defense industry production and the relative implemented certifications.

Representatives of 153 companies attended the meeting. Vice President of SAHA Mr. Bülent Şener underlined the fact that SAHA Istanbul is the greatest cluster in Turkey with its 260 members.

Mr. Bülent Şener: “We are exerting efforts to render our country independent”

Mr. Şener: “What we mainly try to achieve is eliminating the foreign dependency that our Turkish Armed Forces and civil aviation has and rendering our country independent through developing companies to manufacture spare parts, sub systems and systems for the land, air and naval platforms. However, most of the time our companies' infrastructures fail to suffice in developing unique products for defense systems and therefore they need to make additional investments. Even though they have the required technological infrastructure and know-how, SME-level companies with relatively weaker financial means must be supported to develop unique products for the defense industry and civil aviation. If we avail this support in two types, they will be effective in reaching the expected outcomes. This support is composed of R&D and investment support and demand support. Demand support is as crucial as other types of support, perhaps even more crucial. The

government's and foundation company's domestic product procurement are essential toward achieving this. Besides, supporting our companies in reaching foreign markets is of vital essence.”

KOSGEB's Support for Nationalization

In her presentation at the meeting, East Marmara Abigem Business Development Expert, Aydolu Elif Yıldırım, informed the participants on the “SME Technological Product Investment Program” and the “Strategic Product Support Program”. Ms. Yıldırım discussed the non-refundable support of 70% granted to micro businesses and 60% non-repayable support to medium and small sized businesses. She also added that throughout the project, support is provided to companies through machinery, equipment, software support and support provided for staff, training, consultancy, rent and operational costs.

Ms. Yıldırım expressed that “domestic production of intermediate goods with high import dependency” within the framework of the “Technological Transformation Policy in Industry” as part of the Strategic Product Support Program is being supported. She informed the audience regarding the following details: “The maximum limit of support to be granted within the scope of the program is 5,000,000 TL and the percentage of the program's non-refundable support is 70%. In line with the Strategic Product Support Program, support for machinery, equipment, software, personnel expenses, information transfer support, test - analysis,

calibration and reference material and service procurement are being given to the companies.”

Noting that the hydraulic parts of the New Generation Trainer Aircraft Hürkuş Project designed by TAI were manufactured by SAHA Istanbul members, Mr. Rıza Kivanç from TAI's Procurement Department said, “We have been conducting activities concerning the products we have difficulty procuring abroad.”

Mr. Ümit Ünal: “The products to be manufactured should be innovative, unique and green”

Addressing the SAHA members, Istanbul Provincial Director of the Ministry of Science, Industry and Technology Ümit Ünal, noted that the industrialists should be manufacturing products with high added value that could be utilized by the defense industry as well. Stating that “The products you will be manufacturing should be innovative, unique and green”, Mr. Ünal underlined the gap between the import and export figures. “If we purchase a product and sell it with a very high added value after enriching it with technology and software, then the import and export figures will become closer to each other. The incentives emerge automatically if we take a look at the products with high import levels and direct our efforts towards them.”

Stating that the products that could close the gap between the import and export figures as part of the Strategic Product Support Program are the incentives encouraging the manufacturing of local and national products, Mr. Ünal continued, “We would like you to know that we are excited about your enthusiasm as well. We are

at the service of our industrialists. The importance we attach to our industry is equal to the importance we attach to our nation's heroes currently struggling in Afrin, in the East and Middle East at Turkey's border or beyond Turkey's border for the continuity of our state. If we manage to render our production and product achievable without dependencies then it means that we are exerting efforts for our future. I believe that our industrialists in Istanbul will put forth great products."

Mr. İlhami Keleş: "We endeavor to elevate the companies to AS9100 quality standard"

Secretary General of SAHA Istanbul, Mr. İlhami Keleş, stated that the SAHA member companies have been executing 2 UR-GE (Supporting the Development of International Competitiveness) projects toward acquiring the AS9100 which is the international standard for the aerospace industry in respect of quality and risk management. Stating that the AS9100 certification process of companies are included in the support granted by the Ministry of Economy. Mr. Keleş continued, "AS9100 is a qualification level that may increase the manufacturing level of our companies to worldwide standards yet unfortunately we have very few companies with the

AS9100 qualification level. There are a few companies that may join us in the international arena and we need to increase this figure. This is not only a reason to manufacture products, but it is also intended to build an institutional infrastructure required to sustain the companies throughout future generations. The Ministry of Economy provides 75% support to UR-GE projects and I advise you to benefit from this opportunity."

During his speech, Mr. Keleş mentioned the SAHA EXPO Fair to be held for the first time on 13 – 15 September 2018 by SAHA Istanbul and invited the members of SAHA Istanbul to the event.

FNSS Employees Awarded for 25 Years of Service

At the FNSS New Year's party on December 23rd in Ankara, the "Seniority Awards" were presented to the employees of the company that have achieved 20 and 25 years of service. FNSS CEO Mr. Nail Kurt was among the awarded employees and the event ended with the New Year's ball

Approximately 1,200 people, composed of the employees and their families, attended the annual FNSS New Year's party. The employee "Seniority Awards" designated for those who have been with the company for 20 and 25 years were given to the distinguished individuals by FNSS CEO Mr. Nail Kurt at the award ceremony that was held prior to the New Year's ball. Addressing the employees before delivering the awards Mr. Nail Kurt said, "FNSS continued to grow in 2017 and we will continue to do so next year. We introduced new names to our company in 2017 and with their participation we are leaving behind a very successful year in respect to sales and turnover. Hereby, I would like to thank once more all our employees making this possible. We have a challenging year ahead. I believe that all our employees will be doing their best in 2018 as they did this year. Next year we expect to hold this event with 1,400 – 1,500 people. I would like to take this opportunity to wish our employees and their families a happy new year."

Following the opening remarks,



initially the employees who have completed 20 years with the company were awarded and then the awards for 25 years were granted. FNSS CEO Mr. Nail Kurt was also amongst the names receiving the seniority award of 25 years.

FNSS CEO Mr. Nail Kurt took part in the preparation of the proposal for the first ZMA project at Nurol in 1987 and made its mark in numerous successful projects since the establishment of FNSS, and contributed to the company in

reaching its current significant level both in our country and abroad.

Having a critical place in the design and production of tracked and wheeled armored vehicles and weapon systems for the Turkish Armed Forces and the armed forces of allied countries, FNSS is one of the worldwide leading companies in its area that conducts its production activities in two foreign countries with over 4,000 armored combat vehicles used all over the world by different countries and with over 200 domestic sub-contractors.

Otokar Submitted its BAFO for Altay Serial Production

Otokar submitted its best and final offer (BAFO) regarding the serial production of the Altay Main Battle Tank Project to the Undersecretariat for Defense Industries (SSM) on February 8th within the scope of the Modern Tank Production Project by using National Sources.

In 2008, Otokar was awarded as the prime contractor for the development, design, prototype and qualification processes of Altay Main Battle Tank. The qualification and acceptance tests of the prototypes produced in the first phase were successfully completed, and prototypes approved in February 2017. While the inspection and approval process of the Technical Data Package (TDP) by the Undersecretariat for Defense Industries is ongoing, The Undersecretariat for Defense Industries (SSM) released the Call to Bid Document for Altay's 'Serial Production' and 'Integrated Logistics Support' services in July. Otokar submitted its first proposal for this tender on November 16th, 2017.

Otokar General Manager Mr.

Serdar Görgüç commented on the serial production of Altay: "With 55 years of experience and capabilities, Otokar is one of the leading armored vehicles manufacturers of the region. Our vehicles are used in over 30 countries by more than 50 different users. We have successfully completed all the tasks we have undertaken. In "Altay Main Battle Tank Design and Qualification Project" Otokar, as the prime contractor, successfully designed and developed Altay and carried out the project management of this complex project. With the investments we made in this process, the experience we gained, and enhanced R&D capabilities, Otokar captured a strategic momentum in its position in the defense industry. As Turkey's leading land defense systems company, Otokar has no foreign shares, it is purely a national company and we are a publicly listed company, providing full transparency throughout all our operations. With all the competencies and qualifications required for the serial producing Altay,

we are ready for the task. Our wish is for the main battle tank Altay to start serving the Turkish Armed Forces as early as possible."

Mr. Görgüç continued; "We prepared a cost effective, sound and viable proposal with minimum risk and submitted as our BAFO (best and final offer) to Undersecretariat for Defense Industries (SSM). The Otokar proposal was created within the scope of timely response to the urgent needs of the Turkish Armed Forces. Meanwhile, we worked on all the infrastructure requirements and planned the production lines to be prepared for launching production as early as possible with the signing of the agreement for Altay's serial production and obtained the necessary Manufacturing Permit from the Ministry of Defense. In addition to planning the production required by the Land Forces, Otokar also made annual capacity plans for export potential as well as the possible needs for main battle tank derivatives including mine clearing, recovery and engineering vehicles.

Sedef Vehbi Appointed as Otokar's Deputy General Manager for Military Vehicles International Marketing and Sales

It was announced by a written statement on February 26th that Sedef Vehbi, who has been in charge of the Export Sales and the Director of Military Vehicles for years, has been appointed as Otokar's Deputy General Manager for International Marketing and Sales of Military Vehicles.

Sedef Vehbi, following her graduation from Hacettepe University, Department of Economics, completed her MBA degree at Reading University in the UK. During the time she lived in London, she gained experience in Foreign Trade Financing in the Turkish Bank (UK). After her return to Turkey in 1997, she joined Koç Group and took active roles in International

Project Financing and Business Development for 5 years with the Group's foreign trade company namely RAM. Having become acquainted with the Defense Industry as Otokar's Business Development Coordinator in 2002, Vehbi managed the export of Otokar's military vehicles, which are preferred in more than 30 countries on 5 continents. She has held various positions with increasing responsibilities.

As of February 1st, 2018, Sedef Vehbi has been working as Deputy General Manager for International Marketing and Sales of Military Vehicles at Otokar.



“Hızır” Armored Combat Vehicle Successfully Completes Blast Tests

Katmerciler’s “Hızır” Armored Vehicle proved to have satisfactory durability in the blast tests performed both under the vehicle and on the sides under the supervision of an independent, foreign-based institution

It was released to the public with a written statement made by the company that “Hızır” 4x4 armored combat vehicle developed under NATO standards, which is a candidate to become an important strength in increasing the operational power of the Turkish Armed Forces and Security Forces, successfully completed all tests including the blasting test conducted under the supervision of an independent, foreign-based institution. With this test, “Hızır” proved that it has high ballistic protection as well as high resistance against mine and hand-made explosives.

During the blasts performed under the vehicle and on the sides, the vehicle proved that it has durability over expectations. In order to increase the resistance of the vehicle against explosives, the center-section as well as the seats of the “Hızır” Armored Combat Vehicle were designed specifically to increase the safety of the personnel and reduce pressure.



The 400 hp “Hızır” Armored Combat Vehicle designed for high performance under intense conflict conditions in rural and urban areas is equipped with features such as high gradeability, crossing over water, angles of approach/retreat, high range maneuverability. In line with the feedback obtained from the field, the design of the vehicle was also improved to further reduce skidding and keep the level of vision at maximum. In order to provide ease of driving at night,

an additional night vision feature was also added to the dimming headlamp system.

“Hızır”, which has a 70% inclination climbing feature, 100 cm water crossing feature, superior maneuverability at 30% side slope, can reach a maximum speed of 120 km/h.

“Hızır” is also able to serve as a platform vehicle for alternative configurations where command control, CBRN, smoke grenade launcher, various weapon systems are integrated.



“Unmanned and Smart Systems in the Military” Discussions Took Place at Turkey’s Technology Based Think Tank ‘STM ThinkTech’

Turkey’s first Technology Based Think Tank “STM ThinkTech” held its second discussion panel on February 22nd in Ankara.

STM’s General Manager Mr. Davut Yılmaz delivered the opening remarks of the event and a discussion on “New Troops of the Digitalized World: Unmanned and Smart Systems” gathering the leading parties of the defense and security industry.

Undersecretary for Defense Industries Prof. İsmail Demir, Lieutenant General Yavuz Türkgenci, Director of the Plans and Policy Directorate at the Turkish General Staff, Co-Head of the ITU’s Department of Aeronautical Engineering and Faculty Member Prof. Gökhan İnalkan were amongst the panelists of the panel moderated by Journalist and Author Mr. Hakan Çelik.

General Manager of STM Mr. Davut Yılmaz delivered the opening speech of the discussion. Mr. Yılmaz said, “By using its know-how, experiences, infrastructure and human resources advantages, STM aims to assume a crucial role in the development of the new generation indigenous and a national defense industry in Turkey. We entered an era where rapid digital transformation is witnessed in the new generation defense industry. The application of robotic technologies in the military started with unmanned



air vehicles and these unmanned systems have extended gradually. Such systems are being intensely used for operational tasks such as reconnaissance, surveillance, armed patrol, precision guided attack, search and rescue. As STM, I consider it quite critical to



discuss the tasks of unmanned and smart systems in the operational environment of the future, their development and new roles through a stimulating perspective in this panel.”

Undersecretary for Defense Industries Prof. İsmail Demir underlined that the activities towards unmanned systems in defense technologies have accelerated and added: “The new generation robotic systems are regarded as critical strategic capabilities that need to be owned by the powerful armies for the battles of the future and terrorism threats. The unmanned and smart

systems are capable of fulfilling significant operational contributions such as tasks of capturing images for intelligence purposes before troops access a certain site, close support protection and fire support, transporting ammunition that it carries to the engagement area and they will be able to accomplish tactical tasks to distract the enemy. The new generation unmanned smart systems will be reinforcing our forces in land, air and at sea.”

Lieutenant General Yavuz Türkgenci, Director of the Plans and Policy Directorate at the Turkish General Staff stated that the combat zone will witness the evolution of battles as machine against machine, then machine against human and then finally combat will evolve towards war between human and human in the upcoming period.



Mr. Davut Yılmaz - General Manager of STM



Prof. İsmail Demir - Undersecretary for Defense Industries

A Robust Collaboration Among Havelsan and Bites

Havelsan, ranked among the top 100 companies in the world in the field of Training and Simulation, continues its collaboration with the company Bites

Havelsan, one of the leading companies in the defense & aerospace and information industries, is strengthening its business ecosystem by expanding its cooperation with Bites, which was awarded as the longest successful business partner in 2017. With this agreement, the two companies continue to cooperate on the development of R&D projects in the field of training and simulation technologies.

Havelsan Training and Simulation Technologies Vice President Mr. Mehmet Akif Nacar and Bites CEO Mr. Uğur Coşkun signed the agreement during the ceremony. SSM MEBS Department Head Mr. Yakup Taşdelen and SSM Industrialization Department Head Mr. Bilal Aktaş attended the ceremony as guests of honor.

This collaboration between these two leading defense industry companies is expected also to support competition in international markets. Together they have become a well known brand in simulation and training technologies in Turkey in accordance with the industrialization policy of the Undersecretariat for Defense Industries.

Virtual Maintenance Training Systems to Stand out in the Havelsan and Bites Collaboration

One of the four areas in which Havelsan and Bites are planning to cooperate in is Virtual Maintenance Training Systems. The training of technicians to work in the security-critical sectors such as aerospace through simulation-assisted virtual maintenance training systems have become considerably widespread recently in the world's developed economies.

In this sense, meeting the requirements for qualified intermediate technical personnel



in Turkey with advanced simulation technologies is critical.

Combining the global achievements and competencies of Bites with Havelsan's international recognition and sectoral market dominance, there will be an environment that enables the development of a collaboration that can meet the needs of the country for the training of intermediate technical personnel with cost-effective training technologies.

Havelsan-Bites Collaboration in Strategic Position for Global and Local Markets

Bites CEO Mr. Uğur Coşkun stated that the agreement signed with Havelsan will have an impact also on a global scale and said: "Acting together with Havelsan through our strong partnership

and collaboration in international competition will add value both to our country and our companies. Our products and capabilities gained as a solution partner to Havelsan, owing to successfully completed projects in Turkey, are increasing our competency in the international arena. By expanding this successful collaboration we have achieved success in the sector and we are moving it to global markets, we believe we have taken an important step for the branding of technological products and services in Turkey."

Bites CEO Mr. Uğur Coşkun also expressed the following about the potential effects of such a collaboration on global and local markets: "Bites is currently operating in different countries together with the achievements gained in Turkey and is amongst the defense technology exporters of our country by taking place in TİM 500. The collaboration between Havelsan and Bites also involves synthetic environment modeling and content production required by the image generator infrastructure. This is the most important product of the American company Quantum 3D which Havelsan acquired in the past years. This will create a sustainable and competitive position for both global and local markets."



E-Concrete Protocol by SSM

A business alliance protocol between the Undersecretariat for Defense Industries and the Ministry of Environment and Urbanization General Directorate of Construction, with the participation of the Undersecretary for Defense Industries Prof. İsmail Demir and the Undersecretary of the Ministry of Environment and Urbanization Prof. Mustafa Öztürk was signed on 4 January 2018 in order to electronically control the concrete used in construction in Turkey.

Amongst the duties of the Ministry of Environment and Urbanization is to take the necessary precautions for the supervision of construction to ensure quality and safe construction in accordance with the standards / projects and to ensure the safety of life and property. Reinforced concrete, the most preferred construction system in construction, which constitute the building stock in the country, affects 100% of the construction safety of the concrete in the carcass system. Even at low rates, there are some faults, losses and leakages in concrete quality in the production area, construction site and laboratory environments. In this context, by combining the experience and know-how of the Ministry of Environment and Urbanization for construction applications with the



technical capability, experience and knowledge in monitoring, security and information technology in the Turkish Defense Industry, an e-concrete application (with chips) will be initiated. It is aimed to minimize the fault, loss and leakage rates to zero in the future.

With this protocol, following the R&D studies in the second half of 2018, it is planned that the concrete inspection will be done more efficiently by using RFID (Radio Frequency Identification) tags throughout the country. Each of the processes for determining conformity of the concrete used in construction to the standards/projects will be monitorable by the Ministry of Environment and Urbanization. In addition, any interference, except for the Ministry's consent, cannot be made to the chips or devices where the tests are performed, and the results will be transferred directly

to the software system. Within one year following the activation of this system (namely EBIS), the chips to be used will be provided domestically by Aselsan.

The studies for the integration of the e-concrete system with e-government system, which will enable the results of inspection and testing to be shared with the building owners or users, will be carried out simultaneously. Thus, it is considered that the construction supervision services will be subject to a natural test.

Also, the aim is that the production of the RFID tags, which are produced by a limited number of producers in the world and used in many industries, are to be rendered in Turkey within a short period of time and that the use of such domestic and national RFID tags will be provided for use not only the construction sector but also in other sectors.

A-400M Aircrafts C Level Maintenance Capability Acquisition Ceremony Held in Kayseri

A-400M Aircrafts C Level Maintenance Capability Acquisition Ceremony took place at the Kayseri 12th Air Transportation Main Base Command with the participation of National Defense Minister Mr. Nurettin Canikli and Minister of Environment and Urbanization Mr. Mehmet Özhaseki.

Delivering a speech at the ceremony, National Defense Minister Mr. Canikli said: "Our institution, which

has 88 years of aviation expertise, has performed the maintenance of the A-400M, the New Generation Transport Aircraft program with national resources and capabilities for the first time. In this regard, we have taken another important step in the aviation industry. Thus, an average of 900,000 EUR per aircraft previously paid abroad has remained in the national budget, and the operational efficiency of our aircrafts has been

increased with the completion of maintenance in less than 2 months compared to an average of 6-month maintenance period abroad."

Minister Mr. Canikli emphasized that the national and domestic projects, especially in the aviation/aerospace field, are at an important turning point and said, "I hope we will establish an infrastructure to furnish our military factories with the design ability in the near future."

SSM and TEI have Signed R&D Projects

TEI has initiated 3 new projects with the support of the Undersecretariat for Defense Industries. Dinç, Atom and Elektron projects were signed at the ceremony held on 26 January 2018 with the participation of the Undersecretary for Defense Industries Prof. İsmail Demir, TEI General Manager Prof. Mahmut F.Akşit and the directors of the institutions and organizations that support the projects.

Within the scope of the Dinç project that aims to strengthen the university industry cooperation; quality stainless steel and nickel-based alloys required to be used in aerospace platforms for the defense industry



and civil purposes. The Atom project plans to develop nickel metal powder suitable for layered manufacturing for aerospace applications and within the scope of Elektron project and the development of a titanium layer process using the Electron Beam Melting (EBM) method.

Through these projects critical materials for aviation/aerospace applications are to be manufactured domestically and nationally, thus Turkey's foreign dependency in this area will be eliminated to a large extent.

TAI Signed Cooperation Protocols with 16 Universities

Within the scope of "Trainee Engineer Program", TAI signed a protocol with 16 universities by holding a signing ceremony. The program was initiated with the aim to train new engineers and provide them with new abilities during their training within the scope of university-industry cooperation. In the program, the students are able to work as a trainee at TAI at least 1 day a week and relevant fees will be paid for their efforts at TAI.

TAI, with its successful and significant cooperation in Turkey with the participation of 16 universities for the Trainee Engineer Program, made another important step to ensure direct contribution to the Turkish Defense Industry.

The protocol was signed between 13 university rectors and TAI Chairman Prof. Oğuz Borat and TAI

General Manager Assoc. Prof. Temel Kotil. Prof. Orhan Aydın – Council of Higher Education's Supervisory Board Member and Chairman Advisor also attended the ceremony. Speaking on the signed protocol, General Manager Assoc. Prof. Temel Kotil emphasized the importance of the trainee engineer program.

Assoc. Prof. Temel Kotil notes that the general academic average of the trainee engineers that were participating with TAI is quite high, but high grades cannot be the only determining factor for employment standards. Assoc. Prof. Kotil also emphasized the importance of working during university education years and stated that the employment figures should be increased for the success of the ongoing projects within the company.

What is Trainee Engineer Program?

3rd or 4th year students from the departments of engineering such as mechanical, electrical-electronics / communication, aviation, aeronautical, space, industry, computer, metallurgy and materials, chemistry and mechatronics will be able to participate in the program. Candidates who will work as trainee engineers will work at TAI for at least 1 full day per week. In the cities where the company does not operate, TAI engineers will go to universities and work with students. Students will be insured by the universities throughout their time of study, and fees will be paid for TAI studies.

FNSS Achieved Export Award for 2017

The 54th Anniversary Award Ceremony organized by the Ankara Chamber of Industry was held at the Beştepe Culture and Convention Center. At the ceremony held on January 22, 54 companies operating in export, tax, R&D, creating added

value and employment were awarded. Nurol Vice Chairman Mr. M. Oğuz Çarmıklı received the export award from President Mr. Recep Tayyip Erdoğan in the ceremony where FNSS was deemed worthy of the export category.



Airbus to Expand its Industrial Cooperation in Turkey

Airbus signed Memorandum of Understanding with the Undersecretariat for Defense Industries to further expand its industrial cooperation in Turkey

The agreement was signed by the Defense Industry Undersecretary Prof. İsmail Demir and Airbus Board Member Thierry Baril. Within the frame of the agreement designed to expand the scope of industrial partnership and to increase cooperation in Turkey, it is aimed that Airbus increases its purchases from suppliers in Turkey. Subsequently, the total volume is expected to be approximately \$5 billion in purchases from Turkish suppliers between 2020 and 2030.

Delivering a short speech at the signing ceremony, Defense Industry Undersecretary Prof. İsmail Demir said, "We have accomplished very successful projects with Airbus in the past. We wish to develop collaboration areas with Airbus in the coming period. We have set a goal worth \$5 billion. It is not easy to reach this goal; but we have confidence, and when the time comes, we expect to exceed this \$5 billion goal. As a result of the successes to be achieved in the coming years and the performance of our companies, we are confident that Airbus will invest more in the areas of production, engineering and services in the Turkish industry. This is our commitment to Airbus."



Prof. İsmail Demir



Prof. Demir also stated that this was a win-win opportunity and that they wanted to regard this agreement as a partnership. Expressing that this agreement will contribute significantly to the development of the Turkish industry, Prof. Demir also stated



that this would be an opportunity to work together not only in the field of civil aviation but also in the military field; fighter aircrafts, transportation, helicopters, even space vehicles.

Mr. Thierry Baril, Airbus Board Member said, "The industrial cooperation between Airbus and Turkey as well as the continuation of this cooperation is one of the best examples of a successful partnership. We are proud to bring this cooperation to a new level with our Turkish partners."

Stating that Airbus' turnover in Turkey is approximately \$24 million in 2004, Mr. Baril noted that in 2017 it rose to \$280 million, growing 11-fold.

Mr. Baril: "Turkey's Gross Domestic Product (GDP) growth is nearly 7 percent. The Turkish aviation/aerospace sector has exceeded GDP growth in the last 10 years. As Airbus, we are very pleased to be part of this growing sector."

Turkey has been participating in an important part of the Airbus supply chain for approximately 20 years and has partnerships in many prestigious aircraft programs of Airbus, the A350 XWB being in the first place. Focusing on building a long-term and continuous partnership with Turkey, Airbus aims to make purchases that will exceed over \$2 billion from Turkey by 2020. Between the years 2020 and 2030, the total purchase volume is expected to reach \$5 billion.



Mr. Thierry Baril



Rolls-Royce to Supply Propellers and Mission Bay Technology for UK Royal Navy's Type 26 Global Combat Ship

Rolls-Royce has signed two contracts with BAE Systems to supply low-noise propellers and mission bay handling technologies for the UK Royal Navy's new Type 26 Global Combat Ship.

The contracts cover the first three ships - the first of which is currently under construction at the BAE Systems shipyard in Glasgow.

The Type 26 is designed with modularity and flexibility in mind and a key feature which sets it apart from competing designs is its mission bay. The Rolls-Royce Mission Bay Handling System, will enable efficient movement of craft and containerized mission packages within the mission bay. It also features a launch and recovery capability.

Each ship will feature two Rolls-Royce fixed bolted propellers, designed for extremely low underwater-radiated noise, suited to the ships' key role of anti-submarine warfare.

Mr. Don Roussinos, Rolls-Royce, President – Naval, said: "The Royal Navy's Type 26 frigates will be globally deployable, multi-mission warships capable of undertaking a wide range of roles. We're proud to

be supplying our pioneering Mission Bay Handling System, which will ensure flexibility and adaptability throughout the life of the ships, whatever their future mission.

"Our propeller technology will once again provide the Royal Navy with the all-important combination of high propulsive efficiency and low underwater-radiated noise signature to fulfil the essential anti-submarine warfare role of these ships".

Nadia Savage, BAE Systems Type 26 Program Director said: "The Type 26 Global Combat Ship is a next generation anti-submarine platform that will provide great flexibility and agility for the Royal Navy. With Rolls-Royce contracted to supply the low-noise propellers and mission bay technologies,

these vessels will have the highest standards of capability and adaptability that the Royal Navy needs to continue to protect UK national interests. Manufacture of GLASGOW, the first of the three contracted City Class Type 26s for the Royal Navy, is progressing well in Glasgow, and these contracts are further evidence of the great momentum that is driving this project forward."

Rolls-Royce is delivering the majority of the propulsion system for the Type 26. Power will come from a single MT30 gas turbine, providing direct drive through a gear box, and four MTU Series 4000 diesel generator sets from Rolls-Royce Power Systems.



Navantia Selected for Concept Design of the FFG(X) Program for the U.S. Navy

The Government of the United States has awarded a contract to the United States shipyard, General Dynamics Bath Iron Works (GDBIW), supported by the Spanish ship designer and shipyard Navantia, for a conceptual design for the FFG(X) program. The FFG(X) Program is considering the acquisition of 20 frigates with construction in the United States.

The GDBIW and Navantia will use as a reference design the Australian variant of the F-100 frigate and adapt it to the requirements of the U.S. Navy. The F-100 'Alvaro de Bazán' frigate is the only ship of its type that has a proven track record of being built in different shipyards in different countries. There are currently 11 units of the F-100 frigate in-service, including its variants the Australian AWD Hobart class and the Norwegian F310 Fridtjof Nansen class, with an expected total of 13 units operating in 2019.

The Concept Design contract will have a duration of 16 months, ending in mid-2019 when the team will respond to a RFQ for the Detailed Design and Construction contract of the ships, planned to be awarded in 2020.

In order to ensure the program runs to cost and schedule, the U.S. Navy requires designs that are based on a parent-design already in service. Navantia's expertise in frigate design and its successful track record of global exports made the partnership a natural one for GDBIW. Navantia has proven itself as a valuable partner to GDBIW over forty years, where we have worked together on the Spanish Oliver Hazard Perry/Santa María FFG, the AFCON corvette project, and the Australian Hobart Class.

"It is a great honor for Navantia to be able to work with Bath Iron Works again, offering our



design capabilities to the United States," said José Esteban García Vilasánchez, President of Navantia.

Navantia is also supporting the U.S. Navy in maintaining the forward-deployed DDGs which provide Europe's Ballistic Missile Defense at Rota, Spain. The contract signed in 2013 is being successfully executed to the complete satisfaction of the U.S. Navy and Navantia is pleased in having the opportunity of showing its capabilities and commitment to support the U.S. Navy ships overseas.

With bids based on the F-100/Hobart Class already submitted for the Australian SEA-5000 Future Frigate program and the Canadian Surface Combatant (CSC) program, Navantia can offer seamless commonality between these important allies and U.S. five-eyes partners.

With this contract award for the FFG(X) program, together with the Australian SEA-5000 and the Canadian Surface Combatant programs, makes Navantia with its F-100 variants, the only company that is competing in these three major frigate programs.

About General Dynamics Bath Iron Works

General Dynamics Bath Iron Works is a full-service shipyard specializing in the design, construction and support of complex surface ships, providing the U.S. Navy with advanced, high quality surface combatants for more than a century.

About Navantia

The Spanish shipbuilder Navantia, is a world reference in the design, construction and integration of state-of-the-art warships, as well as ship repairs and modernizations. Navantia is also designs and manufactures Propulsion and Power Generation Plants, Integrated Platform Management Systems, Combat Systems, Combat Management Systems, Fire Control Systems, Integrated Communications Systems, Integrated Navigation Systems, and through life support for all its products. Even though its main line of activity is in the naval domain, Navantia also designs and manufactures systems for the Army.

Leonardo to Take Part to DIMDEX 2018

At the 10th anniversary of DIMDEX exhibition – held in Doha from 12 to 14 March –, Leonardo will be demonstrating its state of the art capabilities in defence, security and aerospace sectors to secure Qatar and the surrounding region as well as to protect civil infrastructures in the Gulf, such as airports, ports, sports stadium and oil and gas platforms.

Leonardo's focus at the show will be to promote its range of naval capabilities, spanning from turnkey combat management systems for all classes of military vessels to naval guns, ammunitions and underwater defence systems which are increasingly being recognised in the Gulf region as the gold-standard for integrated maritime security. At DIMDEX, Leonardo will be building on a solid foundation of over 20 years partnering with the Country: Qatar has ordered 21 new-generation AW139 helicopters for a number of military applications, while, in the commercial market, Gulf Helicopters operates a fleet of AW139s for offshore transport missions and of AW189s for the same application. In addition, the company has a strong position in the Gulf's commercial and military helicopter markets and sees significant future opportunities for a number of its helicopter types on display in Doha.

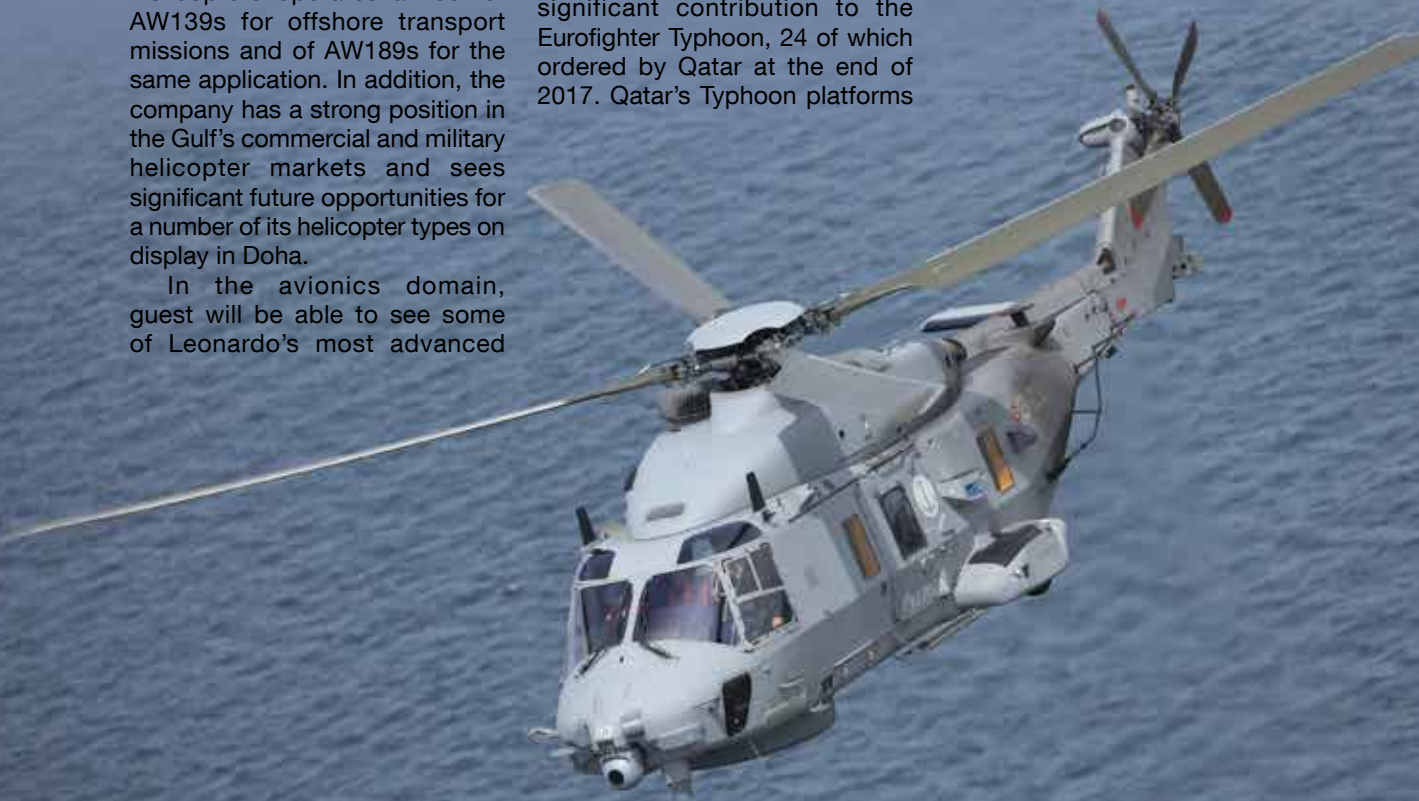
In the avionics domain, guest will be able to see some of Leonardo's most advanced



electronics products including airborne radars, Directed Infra-Red Counter-Measure (DIRCM) systems and Identification Friend or Foe (IFF) equipment. An interactive display on the stand will also give visitors the opportunity to find out about Leonardo's ISTAR (Intelligence, Surveillance, Target Acquisition and Reconnaissance) capabilities.

Of note is Leonardo's significant contribution to the Eurofighter Typhoon, 24 of which ordered by Qatar at the end of 2017. Qatar's Typhoon platforms

will be the most advanced type and will include the Leonardo-led 'Captor-E' E-scan/AESA radar. Beside a significant share of the airframe, Leonardo provides more than 60 percent of the avionics for the Typhoon, including leading the consortia responsible for providing the aircraft's radar, defensive aids suite and infrared search and track (IRST) system.



First Sikorsky Combat Rescue Helicopter Enters Final Assembly

Lockheed Martin team is on track to deliver aircraft ahead of schedule to the U.S. Air Force

Sikorsky, a Lockheed Martin company, is beginning final assembly of the first HH-60W Combat Rescue Helicopter, which will bring unprecedented capability enhancements to the U.S. Air Force rescue mission. The timing of final assembly supports the program's accelerated schedule and positions the aircraft's first flight for the end of this year, two months ahead of schedule.

"Final assembly of this first HH-60W helicopter marks a significant milestone for Sikorsky, our workforce and the U.S. Air Force," said Tim Healy, director of Sikorsky Air Force Programs. "We are on track to deliver this significant capability enhancement ahead of schedule, ensuring the U.S. Air Force continues its mission 'That Others May Live.'"

The final assembly process includes installation of the new Tactical Mission Kit (TMK) delivered from Lockheed Martin's Owego, New York, facility. The integration of sensors, radar and multiple defense systems will bring added intelligence into the cockpit, giving pilots more information to make split second decisions to complete the mission.

"The HH-60W will be the most thoroughly networked and connected vertical lift platform ever produced, bringing unrivaled capability in high-threat environments," said Healy. "The modern battlespace is an unforgiving place, no one survives on their own, and the HH-60W allows the entire suite of air and space power to be linked and employed in support of combat rescue operations, even in deep and denied territory."

The final assembly process also involves installation of a new fuel system that features dual internal fuel tanks totaling



660-gallons, nearly doubling the capacity of the internal tank on a UH-60M Black Hawk. This enhanced capability gives the U.S. Air Force crew greater range and more capability to rescue those injured in the battle space.

This Engineering Manufacturing Development (EMD) aircraft is the first to be assembled at the Sikorsky headquarters in Stratford, Connecticut. A total of nine aircraft will be built in Connecticut during the EMD phase of the program - four EMD aircraft and five System Demonstration Test Articles (SDTA).

The U.S. Air Force program of record calls for 112 helicopters

to replace the Air Force's aging HH-60G Pave Hawk helicopters, which perform critical combat search and rescue and personnel recovery operations for all U.S. military services.

The \$1.5 billion EMD and SDTA contract includes development and integration of the next generation combat rescue helicopter and mission systems, including delivery of nine HH-60W helicopters as well as six aircrew and maintenance training devices, and instructional courseware designed specifically for the HH-60W aircraft. Sikorsky successfully conducted the training systems design review in September.





Leonardo: SW-4 Solo Optionally Piloted Helicopter Performs its First Flight with no Safety Pilot Onboard

Maiden flight with no safety pilot onboard performed from Taranto-Grottaglie Airport in Italy
This latest achievement provides further evidence of Leonardo's leading role in Europe in developing 'unmanned' air systems

Leonardo announced that the SW-4 Solo optionally piloted helicopter successfully completed its maiden flight with no safety pilot onboard at Taranto-Grottaglie Airport (Southern Italy) on 27th February. The aircraft flew for 45 minutes and all systems performed as expected with excellent controllability and handling qualities. Tests included, among others, remote engine start up and shut down with ground run, automatic take-off and landing, hovering OGE (Out of Ground Effect) and acceleration to forward flight, automatic way point navigation to and from the area of operation and simulation of a surveillance mission. The aircraft reached an altitude of 1500 ft and up to 60 knots airspeed during the flight.

Alessandro Profumo, Leonardo CEO, said "This latest achievement provides further evidence of Leonardo's leading role in Europe in developing 'unmanned' air systems, a sector in which we're committed to expanding our already significant presence. I would also like to thank Grottaglie Airport and the aviation authorities for their contribution to the successful achievement of this milestone."

The Solo RUAS/OPH – Rotary Unmanned Air System/Optionally Piloted Helicopter, derived from the SW-4 helicopter produced by Leonardo in Poland and equipped with advanced systems and sensors also made by the company in Italy and the UK, is designed to operate with or without a pilot on board. Test campaigns have been held in Grottaglie with a pilot onboard since December 2016, combined with various trials in Poland, in order to verify the aircraft's operational characteristics and validate flight procedures, in both normal and emergency conditions.

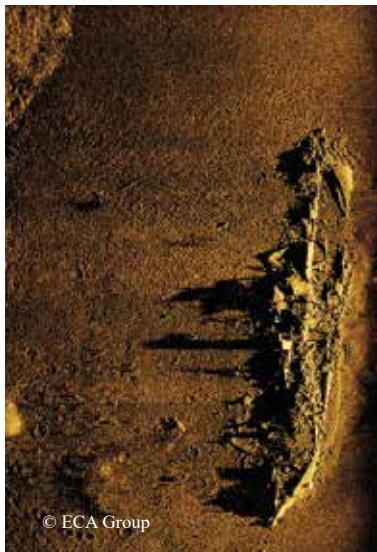
Earlier activities in Italy were

part of a collaboration started in 2015 between Leonardo, Aeroporti di Puglia (AdP) and the Distretto Tecnologico Aerospaziale Pugliese (DTA) for the "Grottaglie Test Bed," which is a candidate to become the Italian solution for national and European industry demands for unmanned aircraft testing. The validation of procedures and regulations for the use of unmanned aircraft are among its key objectives. The trials benefitted from the strong collaboration with ENAC (the Italian Civil Aviation Authority) and ENAV (the Italian Air Navigation Service Provider). The SW-4 Solo had also been involved in other successful demonstrations in Italy and the UK.



ECA Group Unveils its New Generation Mid-Size AUV A18-M for Underwater Mine Warfare

On 16th February ECA Group presented its latest mid-size AUV A18-M dedicated to mine counter measures. With its compactness and its unequalled high-quality imagery this new generation underwater drone becomes the reference in the category of autonomous underwater vehicles dedicated to mine hunting. A live demonstration in Toulon area has been conducted in order to show some of the amazing performances of this new maritime drone that is completing ECA Group's AUV family.



AUV A18-M: Compact, Modular, Connected and Enduring

A18-M is the new generation of autonomous underwater vehicle developed by ECA Group for efficient mine detection and classification in all water depths up to 300m. Like the A9-M and A27-M, the AUV A18-M is specifically designed to operate in the close vicinity of the smartest mines without triggering them.

More compact than previous generation of MCM AUV, A18-M is easy to deploy even from small naval platforms such as new generation of Unmanned Surface Vehicle (USV). Thanks to its high

stability, and the fact that it is less affected by waves than a surface ship or a towed system, a very high image quality is obtained.

In addition, the AUV A18-M can also adapt its operating depth to the environmental conditions, avoiding blind zones due to sound speed stratification.

Advanced embedded processing allows to process in real time the sonar image raw data and extract a list of contacts which are relayed back to the command center using an advanced communication network, with an unmanned surface vessel (USV) or an unmanned aerial vehicle (UAV) acting as gateway. These contacts are then reviewed by sonar operators onboard a mothership or onshore, in order to launch identification and disposal.

An Unequaled Performance Gains with a Synthetic Aperture Sonar (SAS) Onboard A18-M

More generally, the AUV is able also to detect any kind of hazard such as improvised explosive devices (IED), pollutants, as well as to provide very accurate maps of the seabed which allow the environment to be assessed with high fidelity.

The AUV A18-M integrates the Synthetic Aperture Sonar (SAS) and has very high area coverage rate, of the order of 2km²/hr which represents between 5 and 10 times more than that of a conventional side-looking sonar on an AUV. This optimal configuration enables to cover very large areas - of the order 20-40km² (depending on transit distance) in a fraction of the time of legacy assets, with far superior image quality, and with reduced risk to personnel.



Lockheed Martin Receives \$150 Million Contract to Deliver Integrated High Energy Laser Weapon Systems to U.S. Navy

HELIOS will be the first Department of Defense contract to field fully integrated laser weapon system with fixed price options for additional units

The U.S. Navy awarded Lockheed Martin a \$150 million contract, with options worth up to \$942.8 million, for the development, manufacture and delivery of two high power laser weapon systems, including intelligence, surveillance and reconnaissance (ISR) and counter-Unmanned Aerial System (counter-UAS) capabilities, by fiscal year 2020. With the High Energy Laser and Integrated Optical-dazzler with Surveillance (HELIOS) system, Lockheed Martin will help the Navy take a major step forward in its goal to field laser weapon systems aboard surface ships.

"The HELIOS program is the first of its kind, and brings together laser weapon, long-range ISR and counter-UAS capabilities, dramatically increasing the situational awareness and layered defense options available to the U.S. Navy," said Mr. Michele Evans, vice president and general manager of Integrated Warfare Systems and Sensors. "This is a true system of capabilities, and we're honored the Navy trusted Lockheed Martin to be a part of fielding these robust systems to the fleet."

- › HELIOS combines three key capabilities, brought together for the first time in one weapon system:
- › A high-energy laser system: The high-energy fiber laser will be designed to counter unmanned aerial systems and small boats. The energy and thermal management system will leverage Lockheed Martin experience on Department of Defense programs, and the cooling system will be designed for maximum adaptability onboard ships. In addition, Lockheed Martin will bring decades of shipboard integration experience, reducing risk and increasing reliability.
- › A long-range ISR capability: HELIOS sensors will be part of an integrated weapon system, designed to provide decision-makers with maximum access to information. HELIOS data will be available on the Lockheed Martin-led Aegis Combat System.
- › A counter-UAS dazzler capability: The HELIOS dazzler will be designed to obscure adversarial UAS-based ISR capabilities.

In this first increment of the U.S. Navy's Surface Navy Laser Weapon System program, Lockheed Martin will deliver two units for test by fiscal year 2020. One unit will be delivered for shipboard integration on an Arleigh Burke-class destroyer, and one unit will be used for land testing at White Sands Missile Range.

"Lockheed Martin's spectral beam combined fiber lasers bring flexibility and adaptability to defensive and offensive missions," said Dr. Rob Afzal, senior fellow of laser weapon systems. "Our design is scalable, and we can optimize it to meet requirements for future increments."

Lockheed Martin has more than 40 years of experience developing laser weapon systems. The HELIOS award leverages technology building blocks from internal research and development projects, including the ATHENA system and ALADIN laser, as well as contract experience gained from programs such as the U.S. Army / Directed Energy Joint Technology Office RELI program, the U.S. Air Force LANCE program and the U.S. Navy HEFL program.



The First Mission of 'Dream Chaser' Spacecraft Approved by NASA

First Launch to the International Space Station Slated for Late 2020

Sierra Nevada Corporation (SNC) received NASA's Authority to Proceed for the Dream Chaser spacecraft's first mission, with a launch window set for late 2020. The mission will provide cargo resupply to the International Space Station under the Commercial Resupply Services Contract 2 (CRS2).

"SNC has been successfully completing critical design milestones as approved by NASA, and having a timetable for the first launch is another important step achieved for us," said Mr. Fatih Özmen, owner and CEO of SNC. "The team has worked so hard to get to this point and we can't wait to fulfill this mission for NASA."

Key Mission Capabilities:

- › Delivers up to 5,500 kg (12,125lb) of pressurized and unpressurized supplies and scientific research payloads
- › Remains attached to the space station for extended periods so that crew can transfer cargo and perform science laboratory operations
- › Flying laboratory that allows scientists to send commands, receive data in real-time
- › Powered payload science experiments can operate



- continuously during the mission
- › Critical science is conducted from the pressurized cabin (crew-tended or autonomous)
- › Unpressurized cargo/experiments are transferred to or from the space station via robotic operations
- › Returns up to 2000kg of cargo via pinpoint landing at NASA Kennedy Space Center (KSC) Shuttle Landing Facility (SLF) for immediate post-landing handover to customer, maximizing the integrity of data collected on-orbit

- › "The Dream Chaser is going to be a tremendous help to the critical science and research happening on the space station," said Mr. Mark Sirangelo, executive vice president of SNC's Space Systems business area. "Receiving NASA's Authority to Proceed is a big step for the program. We can't wait to see the vehicle return to Kennedy Space Center to a runway landing, allowing immediate access to the science payloads being returned from the station."





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